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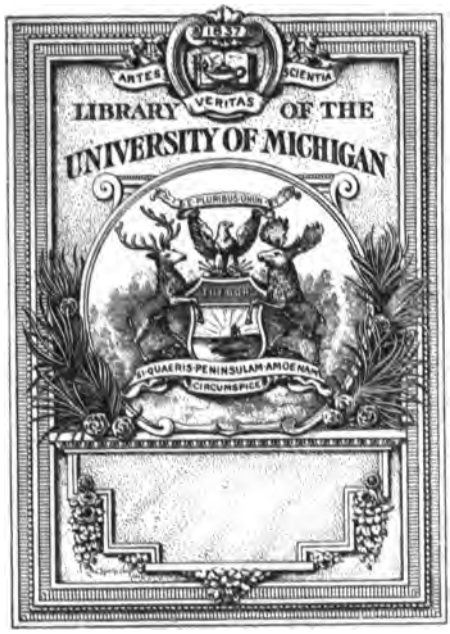
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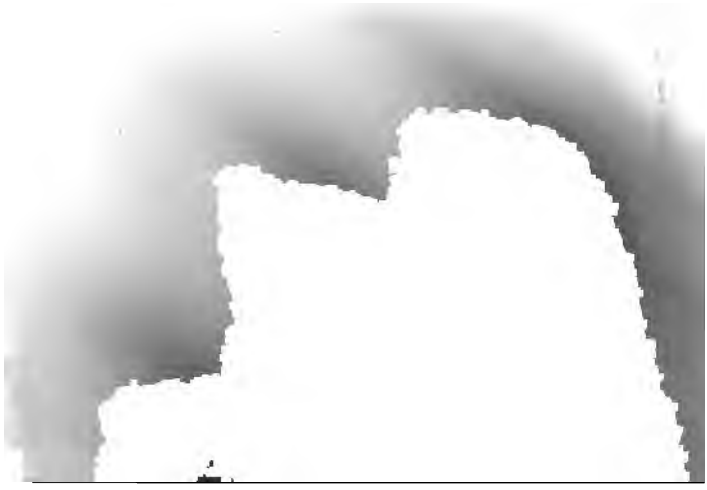

Yours truly

L. F. Forbes

TRANSACTIONS

OF THE

123089

FORTY-THIRD ANNUAL MEETING

OF THE

OHIO STATE

MEDICAL SOCIETY,

HELD AT

COLUMBUS,

JUNE 13, 14 AND 15, 1888.

CLEVELAND, O.:
THE WILLIAMS PUBLISHING CO.
1888.

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E. C. BRUSH, M. D., Zanesville..... ASSISTANT SECRETARY.
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S. S. THORN, M. D., H. J. SHARP, M. D.

ETHICS.

W. J. SCOTT, M. D., C. L. VAN PELT, M. D., F. C. LARIMORE, M. D.,
DAN. MILLIKIN, M. D., R. H. REED, M. D.

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W. H. H. NASH, M. D., W. J. CONKLIN, M. D.

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D. N. KINSMAN, M. D., D. C. WILSON, M. D., F. D. BAIN, M. D.,
H. J. DONAHOE, M. D., H. J. HERRICK, M. D.

ADMISSIONS.

C. P. LANDON, M. D., H. M. BROWN, M. D., A. W. RIDENOUR, M. D.,
P. P. POMERENE, M. D, C. A. L. REED, M. D.

FORTY-THIRD ANNUAL MEETING

OF THE

OHIO STATE MEDICAL SOCIETY.

HELD AT COLUMBUS, JUNE 13, 14, 15, 1888.

The Society was called to order at two o'clock, P. M., June 13, by the President, Dr. S. F. Forbes.

Prayer was offered by the Rev. I. H. McConnell.

The Mayor of Columbus, Honorable Philip H. Bruck, then gave the address of welcome, as follows:

Gentlemen Doctors:

If there be any subject that is of especial interest to the community, the art of preserving health and of curing disease is one, and one of the most important. Without health there is no energy, no mind, no vigor. "*Mens sana in corpore sano.*" In health we are prone to disregard its value, but when, by irregular habits, unnatural acts or excessiveness, we impair the same, then by its loss we appreciate it.

Then we fly to our dear physician, importune him for "Heaven's sake to help us," and when, through his advice and skill, aided by *vis medicatrix naturæ*, he has rescued us from danger, restored to us our lost jewel, we grudgingly pay him, or pay him not at all. Byron truthfully says:

> "Physicians mend or end us
> *Secundum artem*—But although we sneer
> In health—when sick we call them to attend us."

The object and aim of your Society is primarily the cultivation and advancement of medical science and literature, and the elevation of the standard of professional educa-

tion; the maintenance of union and harmony among its members, and the promotion of the character and usefulness of your profession—aims which are truly commendable, and which should attract to your body all physicians who have the proper appreciation of the honorableness and high standing of their profession.

It is an old saying that "the sun shines on your success, while the earth hides your blunders," but I am satisfied that your success is in the same ratio the greater as the sun is infinitely larger than our earth.

A circumstance that came under my observation last Sunday makes me fear that you may be here for selfish and mercenary reasons. On that day I saw one of our most prominent undertakers taking a walk with his family—a thing that I believe in his whole business experience has never happened before; to be out of a funeral on Sunday, something never heard of.

The alarmingly perfect state of the health of the community must be aggravating to the profession, and if you are here to unload an epidemic on us, please give it in homœopathic doses.

That your deliberations and discussions will be to the advancement of your profession and, as a matter of course, to the benefit of the community at large, is my sincere wish, and I trust that, having at this meeting made an exchange of your professional experience and research, you will go to your homes with enlarged ideas and aims, and with increased usefulness; and also will carry with you a redolent recollection of your visit to our city, in whose name and in the name of the citizens thereof, I bid you a hearty and sincere welcome.

The Secretary submitted his report, as follows:

Mr. President and Gentlemen:

At our last meeting the membership of this Society was stated to be 526. The correct number should have been 525, one name having been duplicated by mistake. Since that report there have been added 33 new members, and the Society has lost 6 by death and 25 by forfeiture of membership, leaving the present number 527, a gain of two.

The deaths reported during the year are those of A. C. Miller of Cleveland, Walter A. Dun and C. S. Muscroft of Cincinnati. The following obituary notice of Dr. Dun has been received:

WALTER A. DUN, M. D.

On the evening of November 7 there passed away one of Cincinnati's best known and most promising young physicians, Dr. Walter A. Dun. Naturally gifted with a fine intellect, he received a superior education, and by diligent study, observation and travel, fitted himself to occupy the most honored positions in his chosen profession; and, seemingly, no one had brighter prospects for usefulness and fame.

Stricken with the prevalent disease, typhoid fever, cerebral troubles supervened and he succumbed to the fell destroyer.

Not since the death of the brilliant Longworth and the talented Stallo, has the medical profession of Cincinnati received such a painful shock as when the news reached it that another of its young members had battled, nobly but in vain, with that inexorable foe—death.

Walter Angus Dun was a native of Ohio and first saw the light of day at "Plumwood," near London, Madison county, March 1, 1857. His early education was received at home, under the supervision of a private tutor. At the age of sixteen he entered the University of Ohio, at Columbus, and at the age of nineteen graduated with the degree of Bachelor of Science, in 1878. He matriculated at the Miami Medical College in September, 1878, having Dr. William Carson for his preceptor, and graduated in March, 1882. For general excellence in this examination he was awarded the Faculty Prize of $100 in gold at the Commencement Exercises. In June, 1882, Dr. Dun sailed for England and passed a year in the London hospitals and clinics, perfecting himself in the various branches of his chosen vocation. While there he successfully passed his examinations for the degrees of Licentiate of the Royal College of Physicians (L. R. C. P.) and Member of the Royal College of Surgeons (M. R. C. S.) Returning to Cincinnati in May, 1883, he began the practice

of medicine, which he actively followed until within a short period of his death. Immediately upon his return he was appointed Demonstrator of Histology and Practical Physiology at the Miami Medical College, which position he filled with credit and ability until last winter, when an increase of professional work compelled him to resign, and assume the duties of Clinical Lecturer on Diseases of Children at the same institution. In 1885 he was elected Curator of the Cincinnati Hospital, which place he filled until his recent illness. In 1884 the Trustees of the newly-founded Episcopal Hospital for Invalid Children chose him as one of the Visiting Staff of Physicians of that noble charity. Recently he was appointed one of the Board of Police Examiners, the duties of which position he discharged with his usual ability and zest.

The following Auxiliary Society has deceased since last report: Delamater Medical Association of Norwalk and vicinity.

Annual Catalogues have been received from all Auxiliary Societies except Monroe and Knox.

The author of the resolution to have the names, residences and schools of graduation of all members of Auxiliary Societies published in the 'Transactions,' did not probably realize the labor and difficulty of the task. The published lists show 2,206 names of members of Auxiliary Societies, of which schools of graduation are given for 2,073, about 94 per cent. Besides these there were 8 societies, including by last received catalogue 197 names which made no return whatever, in spite of repeated solicitations. If these are added it gives the total number of members of Auxiliary Societies as 2,403, and the percentage of schools of graduation about 87.

It must be remembered, however, that these names do not represent so many individuals, inasmuch as many physicians are members of two or more local societies.

According to your instructions, I have had printed one thousand copies of Dr. W. W. Jones' paper and distributed them to the members of this Society. Also, copies of the resolution of Dr. H. J. Herrick in reference to the State Board of Health were duly forwarded to the Governor, Secretary of State and members of the Legislature.

The following bills have been countersigned:

Expenses of Committee on Board of Examiners' bill, approved by Committee on Finance	$112 60
Dr. Beach's Estate, by vote of Society	25 00
International Medical Congress, by report of Committee on Finance	100 00
Stenographers' Bill, approved by Committee on Arrangements	37 88
Printing 'Transactions' for 1887, approved by Committee on Publication	373 90
Rent of Hall, approved by Committee on Arrangements	30 00
Reprints of Dr. W. W. Jones' paper	10 00
Salary of Secretary	75 00
Expenses of Secretary as per statement	28 77
Expenses of Assistant Secretary	15 00

The necessary expenses of the Secretary have been as follows:

Postage Stamps, Postal Cards and Postal Envelopes,	$32 36
Express	35
Printing and folding	12 77
Stationery	1 25
Total	$46 73

The following additional titles of papers have been received since the publication of the program: "The Effects of Obesity on Menstruation," E. S. McKee, Cincinnati; "Extreme Talipes Calcaneus due to Contraction from Burn—with Remarks," G. W. Ryan, Cincinnati; "Prostatic Hypertrophy," A. R. Smart, Toledo.

Respectfully submitted,

G. A. COLLAMORE,
Secretary.

The Treasurer and Librarian presented his Annual Report, viz.:

COLUMBUS, O., June, 1887.

As Treasurer of the Ohio State Medical Society, I respectfully submit the following report to this date:

My last report at Toledo, June 15, 1887:

Balance on hand	$ 44 05
Received as initiation fees and dues	933 00
Received from unknown for want of signature, post-marked Cincinnati	3 00
	$980 05

CONTRA FUNDS—PAID OUT (PER VOUCHERS).

E. C. Brush, Assistant Secretary	$ 15 00
H. J. Sharp, Committee on Legislation	112 60
G. A. Collamore, Secretary	103 77
J. F. Baldwin, Chairman Publication Committee	50 00
Emery & Smith, Stenographers	37 88
W. W. Beach Estate	25 00
W. C. Chapman, Rent of Hall	30 00
T. W. Jones as Treasurer	75 00
Gazette Printing Office	21 00
Extra Charges	3 40
International Congress	100 00
Cleveland Medical Gazette	10 00
Steel Engraving Company	22 00
Envelopes and Stamps	3 80
United States Express Company	19 55
Adams Express Company	2 25
American Express Company	37 90
A. C. Berlin Printing Company	373 90
Postage and Stamps	1 50
	$1049 61
	980 05
Society Dr	$ 69 56

As Librarian I report to you on hand: Transactions of few copies following years 1870-71-72-73-74-75-76-77-78, aggregating 89 copies; 1881 and 1882, 105 copies; 1883 no transactions published; 1884 and 1885, exhausted; 1886, 36 copies; 1887, 125. Transactions of other State Societies dating to year 1887, 125 copies. Large number Board of Health reports in exchange for our transactions from different localities. Constitution and By-Laws 25, in pamphlet form. Our Exchange list past year, as follows:

American Medical Journal.
Buffalo Medical Journal.
Medical Age.
List of Exchanges, 1887–1888:

Transactions of Medical Societies of New Hampshire, Vermont, Rhode Island, Alabama, Minnesota, Illinois, Georgia, Louisiana, California, Tennessee, West Virginia, Maryland, Missouri, Wisconsin, New Jersey, Connecticut, Colorado, Michigan, Mississippi, Texas, New York and Nebraska.

T. W. JONES,
Treasurer and Librarian.

The Committee on Finance was filled by the appointment of A. H. Brundage and R. B. Hall, *vice* S. S. Thorn and G. S. Franklin, *absent.*

The Committee on Admissions and Medical Societies was filled by the appointment of E. Sinnett, C. P. Landon and E. B. Stevens, *vice* A. W. Ridenour, P. P. Pomerene and C. A. L. Reed, *absent.*

The following is the report of the Committee on State Board of Examiners' bill:

REPORT OF SPECIAL COMMITTEE ON LEGISLATION.

To the Ohio State Medical Society:

MR. PRESIDENT:—Your committee have to report on the Medical Examiners' bill, that with the advent of a new Legislature, as to *personnel*, the first important step was to determine the make-up as the number of physicians elect of the two branches. In the Senate we found our old friend, Dr. E. Sinnett, and in the House were nine or ten doctors and quasi-doctors.

With this number of doctors in either House, our past experience had taught us any bill that might be introduced, having for its purpose reforms or directly bearing upon the tests of qualifications of those to be admitted to the practice of medicine in our State, would have little chance of becoming a law. It was, therefore, thought best to not push the claims of our old Examiners' bill during the past winter, but to leave the matter open to any efforts in its behalf should auspicious conditions favor.

Very truly, H. J. SHARP.

Ordered to be placed on file.

On motion of R. H. Reed, it was voted to refer the further consideration of this subject to the Committee on Legislation.

Dr. W. J. Scott, Chairman of Committee on General Collective Investigation of Disease, made a verbal report, and requested further time, which was granted.

The Committee on Finance presented the following report:

"This Committee recommends that the annual assessment for the ensuing year be fixed at *one dollar.*

"The Committee approve the bill of expenses of the Committee on State Board of Medical Examiners' bill and recommend its payment.

"A. H. BRUNDAGE, *Chairman.*"

Report adopted.

The Society proceeded to consider the proposed amendments to the Constitution. A motion to adopt the first amendment, viz.: "That a Standing Committee be appointed annually to report on the general subjects of Medicine and Surgery respectively," was discussed by Drs. W. J. Scott and N. Gay, who moved to amend by making a committee of one with an alternate: discussed by Drs. D. N. Kinsman, J. F. Baldwin, E. H. Hyatt, who moved to postpone the whole matter indefinitely, which motion prevailed.

A motion to adopt the second amendment, "That candidates for the elective offices, viz.: President, Vice-Presidents, Secretaries, Treasurer and Standing Committees, be nominated by a general committee, consisting of a delegate from each county represented in the State Society," was discussed by Drs. W. T. Corlett, R. H. Reed and F. Warner, who moved to postpone indefinitely, which motion prevailed.

REPORT FROM DELEGATE TO THE BRITISH MEDICAL ASSOCIATION.

Dr. E. S. McKee of Cincinnati, who was delegate to the last meeting of the British Medical Association, which

met in Dublin last August, reported that his visit had been one of the most pleasant and one of the most instructive of his life. The mother association he found superior to our own in some respects, inferior in a few and similar in many. The role played by the political doctor is quite as great in the British as in the American Association. Quarrels and sectional strife are as frequent and as bitter. The English doctor, as is perfectly natural for an Englishman, thinks himself superior to his Irish or Scotch brother. This shows itself in various ways; among others, in the advertisements of English charitable institutions wishing to fill vacancies in their medical appointments. These advertisements read, "No Irish or Scotch" need apply, or words to that effect. This the Irish and Scotch resent. This resentment took the form of a resolution at Dublin, demanding that this practice on the part of English institutions be discontinued, and declaring the qualifications of the different divisions of the United Kingdom to be on the same footing. This produced a most acrimonious discussion, but the meeting being held on Irish territory, it was carried through with a rush and a cheer. The efforts of our British brethren, in the direction of legislation, seem to be about as persistent and as fruitless as with us. The reports of the various committees might be summed up briefly as follows: "We have done everything possible; we have accomplished nothing." The efforts on the part of the committee to secure legal control of the habitual drunkard were especially worthy of commendation. The finances of the Association were in a solid condition. They own their building on the Strand in London, which serves for the place of publication of the journal and the permanent headquarters of the Association.

The annual income exceeds the expenditures and leaves a comfortable remainder each year.

The membership is about 12,000, of whom about 1200 were present. Their membership is different from ours, in that it includes the members of all the Auxiliary Societies. In the sections there was quite an amount of good, scientific work done. Your delegate's time was spent almost exclusively in the section on Obstetrics and Gynæcology. Dr. Arthur V. Macanaster of the Rotunda Lying-in-Hospitals, in Dublin, was president of the section, and in

a masterly address gave prominence to the practice of the obstetric art in the Rotunda. The doctor made a very good executive officer, cutting off the long-winded bore and drawing out the man whose erudition was only measured by his modesty. In calling for discussion he would not say, Has any gentleman anything to say? but, Has any gentleman anything new to say? Under his command very little time was lost and much work accomplished. This section was highly favored by two papers from Dr. G. Apostoli of Paris, on his method of treating fibroid tumors of the uterus and endometritis. The section was treated to a demonstration in the Rotunda, by Dr. Apostoli, of his method of applying electricity in the treatment of fibroid tumors of the uterus. Professor Unna of Hamburg was present and received marked attention in the section on dermatology. In social matters the British Association far excels us. Their meeting at Dublin as well as the one at Ryde, Isle of Wight, which I attended in 1881, was accompanied by a perfect round of entertainments. At Dublin we were dined, wined, given suppers, luncheons, breakfasts, garden parties, *soirées*, balls, receptions, excursions and sermons. There may be people starving in Ireland, but certainly not suffering for anything to drink; for I never saw as much as was put before us at Dublin. The Ohio State Medical Society can feel itself highly honored by the way in which its delegate was received by the British Medical Association. His visit was rendered much more pleasant than had he gone without his delegate papers.

A paper was read by Dr. D. P. Allen of Cleveland, on "Radical Cure of Hernia."

Two patients were exhibited, illustrating the manner of operating and results obtained.

A paper was read by Dr. H. J. Herrick of Cleveland, on "Some Unsolved Problems in the Contagiousness of Disease."

Discussed by Drs. D. N. Kinsman of Columbus; H. J. Sharp of London; R. B. Hall of Cincinnati; E. Conn of Akron; R. H. Reed of Mansfield; J. F. Baldwin, R. Wirth and F. F. Lawrence of Columbus.

Adjourned to 9 A. M. June 14.

SECOND DAY—MORNING SESSION.

Society called to order at 9 A. M. President Forbes in the chair.

The minutes of previous session were read and approved.

A paper was read by Dr. A. W. Ridenour of Massillon, on "Radical Cure of Hernia."

This paper and that of Dr. Allen were discussed by Drs. H. J. Herrick and J. McCurdy of Youngstown.

A paper was read by Dr. B. M. Ricketts of Cincinnati, on "The Treatment of Acne."

A paper was read by Dr. W. T. Corlett of Cleveland, on "Diseases of the Skin due to Defective Alimentation."

The two papers were discussed by Drs. D. N. Kinsman, S. Loving of Columbus, W. McIntyre of Warrensburg, and A. W. Ridenour.

A paper was read by Dr. D. H. Brinkerhoff of Fremont, on "Ergot and its Uses in Labor and Uterine Hemorrhage."

Discussed by Drs. W. McIntyre, Dahoof, A. R. Smart of Toledo; W. W. Hall of Springfield; J. F. Baldwin of Columbus; F. D. Bain of Kenton; F. D. Case of Ashtabula; E. J. Wilson of Columbus; E. H. Hyatt of Delaware, and F. F. Lawrence of Columbus.

The following communication was received from the Ohio State Pharmaceutical Association, ordered to be placed on file and a suitable reply returned:

To the Ohio State Medical Association:

We extend greetings to the members of your organization now in session in this city, and cordially invite them to visit us during our sessions.

LEWIS C. HOPP, *Permanent Secretary.* S. E. ALLEN, *President.*

A paper was read by Dr. W. C. Chapman of Toledo, on "Tubercular Diathesis."

Adjourned to meet at 2 P. M. at Starling Medical College.

SECOND DAY—AFTERNOON SESSION.

Society met at 2 P. M. at Starling Medical College Vice-President A. B. Carpenter in the chair.

The President, Dr. S. F. Forbes, delivered the Annual Address, which, on motion of Dr. S. S. Thorn, was referred to the Committee on Publication with instructions to publish.

Dr. Starling Loving made a short address as follows:

We are pleased to see you here, gentlemen, pleased to see you; and if you should see fit to make this room your permanent place of residence, nothing would please us better. Come again, come every year. Meet here free of cost; we will always welcome you and be glad to see you; give you this room and charge nothing for it. [Applause].

The Society then proceeded to the election of officers for the ensuing year, which resulted as follows:

President—Dr. P. S. Conner, Cincinnati.

1st Vice-President—Dr. D. Halderman, Columbus.

2d Vice-President—Dr. B. M. Ricketts, Cincinnati.

3d Vice-President—Dr. A. H. Brundage, Xenia.

4th Vice-President—Dr. H. M. Brown, Hillsboro.

Secretary—Dr. G. A. Collamore, Toledo.

Assistant Secretary—E. C. Brush, Zanesville.

Treasurer and Librarian—T. W. Jones, Columbus.

Member of Committee on Finance for 5 years—Dr. D. P. Allen, Cleveland.

Member of Committee on Ethics for 5 years—Dr. W. J. Scott, Cleveland.

Member of Committee on Publication for 5 years—Dr. A. B. Carpenter, Cleveland.

Member of Committee on Legislation for 5 years—Dr. D. N. Kinsman, Columbus.

Member of Committee on Admissions and Medical Societies for 5 years—Dr. C. P. Landon, Westerville.

The Society selected Youngstown as the place of meeting in 1889, and appointed as the time of meeting the fourth Wednesday of May.

The following amendment to the Constitution, offered by Dr. D. P. Allen, was unanimously adopted:

That, at the first session of the Society each year the President appoint a committee of five, whose function shall be to present to the Society nominations for all elective offices except that of President.

Dr. R. H. Reed then made "An Experimental Demonstration of the Value of Gaseous Enemata in the Diagnosis of Perforations of the Intestines, and their Repair by the Rubber Ring and Decalcified Bone Plate Method" on two dogs provided for the experiment.

On motion of Dr. S. S. Thorn, the Society tendered a vote of thanks to Dr. Reed.

Dr. P. S. Conner of Cincinnati made an address on "Malpractice Suits," and presented a copy of the law recently passed in the State of New York, which he recommended as suitable to this State and offered the following resolution, which was carried:

Resolved, That a Special Committee be appointed to draft an act to be presented to the General Assembly of the State of Ohio at its next session, similar in its provisions to that now upon the Statute Book of the State of New York, entitled, "An Act providing for the protection of physicians, etc.," and to take necessary measures to secure, if possible, the passage of such Act.

The New York Act referred to is as follows:

AN ACT

Providing for the Protection of Physicians, Surgeons, Dentists, Editors, Authors, Publishers, Artists, Architects, Designers and Engravers, against Speculative Lawsuits.

The People of the State of New York, represented in Senate and Assembly, do enact as follows:

SECTION I.—Be it enacted, that in all suits that may be brought against any Physician, Surgeon or Dentist, for alleged damages in any case arising from any alleged malpractice on the part of any Physician, Surgeon or Dentist, or against any Editor, Author or Publisher, for any alleged libel, or against any Artist, Architect, Designer or Engraver, for any alleged damages done in his profession, the plaintiff shall, before such suit be commenced, give a bond in at least double the amount of damages claimed in such suit.

Section II.—Such bond shall be signed and secured by two or more sufficient sureties, who shall be free-holders or house-holders, to be duly approved by one of the judges of the court, in which such suit shall be commenced, conditioned that if the plaintiff shall not maintain such suit, or shall not recover against the defendant, such sureties shall well and truly pay to the defendant all cost and damages that the defendant may sustain by reason of such suit, and all legitimate expense incurred in defending the same.

Section III.—If, during the pendency of such suit, the said sureties, or either of them, shall become insolvent or irresponsible, the plaintiff shall immediately substitute other and good and sufficient sureties to be approved in like manner as hereinbefore provided for.

Section IV.—In case the plaintiff shall not comply with the provisions of this act, no such suit shall be maintained against any Physician, Surgeon or Dentist, for any alleged damages in any case of any alleged malpractice; or against any Editor, Author or Publisher, for any alleged libel, or against any Artist, Architect, Designer or Engraver, for any alleged damages done in his profession, and that any suit may be dismissed on motion of any defendant at any time after any process may have been served on the defendant in any such suit, and such defendant shall be entitled to and shall recover against any such plaintiff such costs and damages as the court shall award upon such motion to dismiss any such suit.

Section V.—Whenever any plaintiff shall not maintain the suit, nor recover damages as hereinbefore provided, the defendant shall immediately be entitled to commence a suit upon the bond hereinbefore provided for be given;

and such suit shall be a lien upon the property specified in such bond, upon a notice of *lispendens* being filed with the clerk of the court in which such suit shall be commenced.

Section VI.—All acts inconsistent with this Act are hereby repealed.

Section VII.—This Act shall take effect immediately.

A paper was read by Dr. J. T. Whittaker of Cincinnati, on "The Therapy of Tuberculosis."

This and Dr. Chapman's paper were discussed by Drs. H. J. Herrick and W. J. Scott of Cleveland.

A paper was read by Dr. W. J. Scott of Cleveland, on "Four Cases of Diabetes Mellitus, which I did not cure."

Discussed by Drs. J. T. Whittaker, D. P. Allen, H. J. Herrick and J. F. Baldwin.

Society adjourned to 9 A. M., June 15.

THIRD DAY—MORNING SESSION.

Society called to order at 9 A. M., President Forbes in the chair.

The minutes of preceding two sessions read and approved.

The Committee on Memorial Concerning Immigration of Defective Classes submitted the following report:

Mr. President and Gentlemen:

Your Special Committee, to whom was referred the resolutions of the Wisconsin State Society last year, with reference to the Immigration of the Defective Classes, beg leave to submit the following brief report:

It is claimed in said resolution, that Immigration of the Defective Classes, such as paupers, criminals, insane, deaf-mutes, blind, idiots and lepers, constitute one-third of the entire number of our country; and ask for proper steps to be taken to lay this matter before Congress for suitable preventive legislation.

Now your Committee, while admitting the statements made by said Wisconsin Society in reference to the immigration of defective classes, can see no possible way to eliminate from the immigration of foreigners said defective classes. And, moreover, while this is true, there are among our foreign population many of our best citizens, soldiers, business and professional men, whom we are glad to welcome to our shores; therefore,

Resolved, That the question of foreign immigration carrying with it the defectives, involves so many State and National questions and general policies, that this Society deems it unwise and impolitic to make a deliverance.

That the questions involved in said preamble and resolution of Wisconsin State Society, relative to the immigration of defective classes, are beyond our jurisdiction, and therefore we decline to indorse the same.

E. H. HYATT,
R. HARVEY REED.

DISCUSSION.

Dr. Scott:—I am not entirely in accord with the sentiment of that report. I know that there are a great many people sent here from foreign countries simply to get rid of them, and I believe it would be a good policy for us to examine those who are coming, and if they are defective—paupers, lunatics, fools or cripples—they should not be permitted to come to this country; and if they do come, then our authorities at sea-port towns should send them back again. Our institutions of charity in this country are loaded down with this class of people. This is more manifestly the case in our large cities.

In the state of New York they have a society to send these people west—it don't make much difference where they go, only so they get out of that state. As a consequence, our western cities are being filled up with them. What can we do with them? They have no friends here. They ought to be sent home where they came from, and I think the mistake with the people of this country is that they have not already adopted some measure to prevent these people from landing here.

Dr. Reed:—Perhaps it is proper and right that the

committee should make some explanation of the reason why they have presented this report. In the first place you will observe that the question which has been referred to this committee involves a great many questions of statesmanship, and you can see how impossible it is to pass a law that will just fit the case, and prevent the blind man from emigrating to this country. We will suppose that a man was to emigrate to this country who had a blind daughter and that he was able to take care of her; you could not say to the rest of his family, You can come over, but she must stay.

Dr. Scott:—Yes, but she has someone to take care of her: she has a father and mother.

Dr. Reed:—I understand; but we will suppose still further that he is also without money; he has to take care of himself, his wife and that blind daughter, and he probably has not got a dollar, but yet he is willing to work, he is able to work. How are you going to divide this family? The committee thought of this in taking action on this matter. I am in favor of passing a law that will regulate immigration, but I think that such a law as is presented by the Wisconsin Society is absurd in practice, utterly impossible to put into practice, and that is the reason this committee has reported as it has.

Dr. J. McCurdy:—I think that this Society ought to prepare an expression as a society to send to Congress asking that proper legislation be enacted to restrain foreigners from coming to this country who cannot take care of themselves. I think that it is our duty as guardians of the public health to take some step in this matter.

Dr. Reed:—I simply want to add that the committee was not empowered to make suggestions. We were simply to consider the suggestions made by the Wisconsin Society.

Dr. Kinsman:—I am for a re-commitment of this matter to this committee. I make that as a motion. (Motion seconded.)

Dr. Landon:—It appears to me that the Ohio State Medical Association would place itself in a position to-day on one of the most important questions now presented to the American Republic. It is a question which will involve no personal or political contest; it is a question which

appeals to humanity; and who are the guardians of humanity but the medical profession? I hope that there is no such timidity among the medical profession present as to prevent them asserting themselves upon this question.

Dr. Hyatt:—I want to say a word or two. I supposed that we would have a little difference of opinion on this subject, but I want to call attention to one fact: the only thing that was before this committee for consideration was this resolution, which came in a shape that we did not feel as though we could endorse. We are perfectly willing to take this matter under further consideration and report again, if you desire. We are willing to give the matter further investigation, and if it is the wish of the Society, we will try again.

The motion to re-commit was carried.

A paper was read by Dr. A. R. Baker of Cleveland, on "The Consequences of Acute Suppuration of the Middle Ear, with Special Reference to Opening the Mastoid."

Dr. R. H. Reed presented the following resolution, which was adopted:

WHEREAS, the Michigan State Medical Society is now in session at Detroit, Michigan; therefore be it

Resolved, That the Ohio State Medical Society wire fraternal greeting to said sister society and wish them Godspeed and prosperity.

On motion of Dr. H. M. Brown, the time for discussion of papers was limited to three minutes.

Dr. Baker's paper was discussed by Drs. A. R. Smart, H. J. Herrick, J. McCurdy, C. W. Tangeman and J. F. Baldwin.

A paper was read by Dr. H. P. Allen of Columbus, on "The Importance of the Early Recognition of Glaucoma."

Discussed by Drs. S. Loving, A. R. Baker, C. W. Tangeman and H. J. Herrick.

A paper was read by Dr. C. W. Tangeman of Cincin-

nati, on "The Value of Eye Symptoms to the General Practitioner in Diseases of the Nervous System."

A communication from "The Exhibitors" was read by the Secretary, and on motion was laid on the table.

The following resolution from the Portage County Medical Society was ordered to be placed on file:

In accordance with instructions of the Portage County Medical Society, we present the following:

Resolved, That this Society appropriate————dollars, to be forwarded to the committee having in charge the erection of a monument to the memory of Dr. Benjamin Rush.

B. B. LOUGHEAD,
C. S. HIDDLESON, } *Delegates.*

A communication from the State Medical Society of Arkansas, relating to quack advertisements in religious papers, was read and ordered to be placed on file.

A paper was read by Dr. W. D. Hamilton of Columbus, on "Two Cases of Ectopic Gestation." Specimens were exhibited.

Discussed by Drs. R. B. Hall, J. McCurdy, J. W. Hamilton, F. F. Lawrence and H. J. Herrick.

A paper was read by Dr. H. M. Brown of Hillsboro, on "The Painless Treatment of Rectal Diseases."

Discussed by Drs. F. C. Larimore of Mt. Vernon, H. J. Herrick and A. R. Smart.

A paper was read by Dr. J. U. Barnhill of Columbus, on "Indigestion."

Society adjourned to 1,30 P. M.

THIRD DAY—AFTERNOON SESSION.

Society was called to order at 1.30 P. M., President Forbes in the chair.

The minutes of the preceding session were read and approved.

The President announced as the Special Committee on Bill Relating to Malpractice Suits, etc., the following members: P. S. Conner, Cincinnati; H. J. Herrick, Cleveland; P. P. Pomerene, Berlin; J. W. Hamilton, Columbus; E. Sinnett, Granville; W. W. Jones, Toledo, and C. P. Landon, Westerville.

Dr. Barnhill's paper was discussed by Dr. H. J. Herrick.

A paper was read by Dr. C. F. Clark of Columbus, on "A Case Demonstrating the Relation Existing Between Diseases of the Eye and Nose."

Discussed by Drs. W. J. Scott, J. McCurdy and A. R. Baker.

A paper was read by Dr. H. Longstreet Taylor of Cincinnati, on "The Treatment of Pott's Disease—with Cases."

Discussed by Drs. G. W. Ryan, N. Gay and R. H. Reed.

On motion of Dr. C. P. Landon, a vote of thanks was tendered to Drs. Loving, Hamilton and McMillen for the entertainments offered to the Society.

A paper was read by Dr. S. L. McCurdy of Dennison, on "Elastic Extension in the Treatment of Chronic Inflammation of Joints."

A paper was read by Dr. J. W. Wright of Columbus, on "A Rare Case of Orbital Tumor."

On motion of Dr. C. P. Landon, a vote of thanks was tendered to the officers of the Society for the satisfactory performance of their various duties.

A paper was read by Dr. A. R. Smart of Toledo, on "Prostatic Hypertrophy."

Discussed by Drs. R. H. Reed and C. P. Landon.

A paper was read by Dr. P. P. Pomerene of Berlin, on "A Malpractice Suit."

On motion, the paper of Dr. A. B. Carpenter of Cleve-

land was read by title and referred to the Committee on Publication with instructions to print in the "Transactions."

Dr. Pomerene's paper was discussed by Drs. H. J. Herrick, F. F. Lawrence and W. J. Scott, and on motion of Dr. Herrick was referred to the Special Committee on that subject.

The following is the consolidated report of the Committee on Admissions and Medical Societies, which was adopted, and the following were elected members of the Society:

NAME.	P. O. ADDRESS.	WHERE GRADUATED.
Andre, O. C.	Piketon.	Ohio Medical College.
Barnes, E. J.	Hebron.	Detroit Medical College.
Brown, W. B.	Columbus.	Starling Medical College.
Campbell, W. A.	Eaton.	Ohio Medical College.
Christopher, W. S.	Cincinnati.	Ohio Medical College.
Deahofe, S. P.	Potsdam.	Ohio Medical College.
Duff, J. S.	Cadiz.	Columbus Medical College, and University of N. Y.
Eddy, C. W.	Marietta.	Miami Medical College.
Gale, G. T.	Newport.	Jefferson Medical College.
Galloway, C. M.	Xenia.	Ohio Medical College.
Graham, W. T.	Lebanon.	Ohio Medical College.
Guerin, L. T.	Columbus.	Starling Medical College.
Henderson, R.	Urbana.	Columbus Medical College.
Hiddleson, C. S.	Atwater.	Ohio Medical College.
Hodges, G. H.	Urbana.	Med. Dep't. Wooster Univ.
Lawrence, F. F.	Columbus.	Columbus Medical College.
Lawless, J. T.	Toledo.	University of Michigan.
Leach, S.	Mt. Sterling.	Starling Medical College.
Lightner, S. B.	Sabina.	Jefferson Medical College.
McClellan, B. R.	Xenia.	Miami Medical College.
Matthews, R. C.	Columbus.	Jefferson Medical College.
Mills, C. H.	Toledo.	Toledo Medical College.
Noyes, H. J.	Meigsville.	University of Pennsylvania
Overly, J. E.	Columbus.	Ohio Medical College.
Rowles, W. T.	Columbus.	Columbus Medical College.
Spence, J. A.	Flushing.	Miami Medical College.
Stein, G. S.	Columbus.	University of Pennsylvania
Tangeman, C. W.	Cincinnati.	Ohio Medical College.
Taylor, H. Longstreet	Cincinnati.	Ohio Medical College.

Titus, A.	Portsmouth.	Cincinnati Med. and Surg.
Torrence, J. M.	Jamestown.	Ohio Medical College.
Upson, H. S.	Cleveland.	Phys. and Surg. New York.
White, G. M.	Columbus.	Starling Medical College.

The Committee recommend that the following Societies be made auxiliary to this Society:

Adams County Medical Society.

Greene County Medical Society.

The Committee find that the following Societies are represented by delegates, viz.:

Academy of Medicine of Cincinnati—E. S. McKee, W. S. Christopher, H. Longstreet Taylor, P. S. Conner.

Allen County Medical Society—A. S. Rudy.

Belmont County Medical Society—J. A. Spence.

Champaign County Medical Society—Robert Henderson, G. H. Hodges.

Cincinnati Medical Society—R. B. Hall, John C. Oliver, Jos. Eichberg.

Columbus Medical Club—L. T. Guerin, R. C. Matthews, S. M. Lecrone.

Cuyahoga County Medical Society—D. P. Allen.

Greene County Medical Society—B. R. McClellan, J. A. McClure, L. M. Jones.

Harrison County Medical Society—J. S. Duff.

Hempstead Academy of Medicine—O. C. Andre.

Highland County Medical Society—H. M. Brown.

Jefferson County Medical Society—J. C. M. Floyd.

Mahoning County Medical Society—John McCurdy.

Miami County Medical Society—S. P. Deahofe.

Miami Valley Medical Society—N. B. Vanwinkle.

Morgan County Medical Society—Hiram J. Noyes.

Muskingum Valley District Medical Society—N. J. Noyes, Edmund C. Brush.

North Central Ohio Medical Society—A. J. Hise.

Northeastern Ohio Medical Association—A. B. Walker, B. B. Loughead, E. W. Howard.

Northwestern Ohio Medical Association—F. D. Bain.

Portage County Medical Society—C. S. Hiddleson, B. B. Loughead.

Sandusky County Medical Society—Wm. Caldwell, D. H. Brinkerhoff.

Tuscarawas County Medical Society—J. D. Otis.

Washington County Medical Society—E. H. Trickle, H. H. Funk, C. W. Eddy, Geo. T. Gale.

The minutes of the session having been read and approved, the President closed the meeting.

The Society then adjourned to meet in Youngstown on the twenty-second day of May, 1889, at 2 P. M.

G. A. COLLAMORE, *Secretary.*

S. F. FORBES, *President.*

OHIO STATE MEDICAL SOCIETY.

At the Seventeenth Annual Session of the Ohio State Medical Society, the following resolution was adopted:

Resolved, That the publication of any address, prize essay, or other paper, by this Society, is no evidence of its endorsement of the sentiments therein contained.

SAMUEL FRANKLIN FORBES, M. D.

SAMUEL FRANKLIN FORBES, M. D., was born at Canton, Hartford County, Connecticut, June, 1829. His ancestors were from Scotland on his father's side, and his mother's were from England. Both of his grandfathers were in the Revolutionary War. At the age of eleven he left the paternal home and went to live with an uncle on a farm. Three years later, his parents being dead, he removed to Ulster County, State of New York, and entered the family of a married sister. Two years were spent in literary pursuits, in schools and with private tutors. At the age of sixteen he began the study of medicine with his brother-in-law, Dr. S. L. Heath, and graduated in medicine and surgery in March, 1850, at the University of New York, with much honor.

He immediately entered the Emigrants' Hospital, Ward's Island, New York City, as one of the medical staff. The term of two years was shortened by his early promotion to senior physician, and he left the institution, then the largest hospital in the United States, and started west in search of his fortune.

He pitched his tent in Toledo, in the fall of 1851, where he since resided except during his army service. Here Dr. Forbes immediately took a front rank among his fellows, more especially in the branch of surgery.

When the war broke out in 1861, although a Democrat, he was one of the earliest in denouncing the Rebellion, and, leaving a young family; went into the service as Surgeon of the Sixty-Seventh Regiment, O. V. I. He

rose rapidly to Brigade, Division, and was for a time Acting Corps Surgeon. His executive ability, his untiring energy and his fine professional acquirements made him a most useful man to the service.

In 1866 Dr. Forbes was elected the first health officer of Toledo, and by his energy and ability the city was kept safe from the cholera plague, which devastated the neighboring cities so terribly that year. Dr. Forbes was for a long time city and county physician, also United States marine physician, and a leading railroad physician at Toledo for many years.

In the establishment of the Northwestern and the new State Insane Asylums at Toledo, no person did more than he. In 1885 he was elected Mayor of Toledo and filled the office with much ability and to the satisfaction of all parties. In a published card at the end of his term he declined a renomination on account of the duties of Mayor interfering with his professional business.

In his chosen profession the doctor has always held high rank. He has written many papers on medical subjects, and is a member of six medical societies, including the American Medical Association.

Dr. Forbes is the originator of "A New Amputation Through the Foot," first presented before this Society in 1874. The operation is now described by all the standard works on surgery and taught in the medical colleges of our country.

The doctor has also honorable mention in the 'Medical and Surgical History of the War of the Rebellion.'

In 1855 Doctor Forbes was married to Mary, eldest daughter of the late Wm. H. DeForest of New York. Two children, a daughter and a son, were born to them. The sad death of the former, at the age of eighteen, occurred twelve years ago. The son is engaged in the government service.

Doctor Forbes is the youngest of nine children, all living but two—is of genial nature and a plain, approachable man. His chief characteristics are untiring energy, unswerving integrity and positiveness, almost obstinacy. His unanimous election to the Presidency of the Ohio State Medical Society exhibits the esteem and regard in which he is held by his fellows.

PRESIDENT'S ADDRESS.

BY SAMUEL FRANKLIN FORBES, M. D., TOLEDO.

Gentlemen:

The field of Presidents' addresses has been so thoroughly garnered that it is not even a respectable stubble, but in reality a seedless, fruitless, sunburnt plain. From his excellency, the President of this great Republic, down to the President of the Rural Debating Society, a patient and long-suffering people has been pelted, so to speak, by them with this too often vacuitous literature for lo, these many years. The genius of a Koch or a Pasteur would fail to find a bacteria or microcosm in this field that would "culture" into an original thought.

You have often been told of the divine origin of our noble profession, of Æsculapius, of the labors of the Asclepiadæ, of Hippocrates, the father of medicine, of Galen, Harvey, Cullen, the Hunters and hosts of other brilliant workers which adorn the pathway of our art from the days of mythology and mysticism to the hard, stern requirements of our own time. All these things are as familiar to you as household words. And the attempts to fetter the mighty march of our great science into the narrow confines of schools and systems you have long been cognizant of. How the Humoral pathology flourished for centuries, followed by Brunonianism, which in turn was succeeded by Bronpaisism, then by the doctrine of Rasori, Thompsonianism, and last that greatest assault upon the credulity of mankind called Hahnemannism, you well know. All these and many

more so called systems or schools have risen and fallen in little more than a century. The last mentioned, while nominally still existing, has discarded every tenet of its originator and feebly flourishes in name only, a sort of trade-mark or catch-penny device for revenue only, to entrap the feeble-minded, the unwary and the ever existing army of cranks.

The lessons of these events are so striking that none of us can escape them. They are the old story of truth and error, the solid array of facts, reason, judgment and experience against a sentiment, a single idea, or a false, popular estimate. They teach over again the verity of those lines of the poet when he says:

> "Truth crushed to earth will rise again,
> The eternal years of God are hers,
> While error, wounded, writhes in pain,
> And dies among her worshipers."

A further lesson is inculcated also, and that is that the present age is the age of hard, practical common sense which will not be satisfied with vagaries or mysticism, but goes with the earnest workers in our profession in their search for truth and a reason for the faith within them. Only a small portion of our people, in the cities and towns consisting of male dudeism and female folly and fashionableness, profess satisfaction and support of the medical quackery and vagaries of to-day.

Certainly the last half of this century appears least favorable to empiricism and charlatanism than any for ages past among intelligent people. With them sanitation, hygiene, asepsis, the germ theory, the wonderful achievements of modern surgery, the rapid strides in pathology, gynæcology, therapeutics and specialism are regarded with favor and support.

These facts are inspiring and encourage our tireless workers in their searches after truth.

Some will think these statements too sweeping, but

while it is here admitted that idiots, cranks and corruptionists still continue to be produced, nevertheless in the main the above statements are true.

Wandering once more into the well-worn field of which I have spoken, there are a few topics which, at the risk of adverse criticism, I am impelled to comment briefly upon.

The wide range of the branches of study fundamental to the study of medicine proper, together with the extensive and constantly increasing area of the curriculum of proper medical education, makes it impossible for any ordinary mind to grasp or receive all this vast array of information in the old time period of student life.

This subject of medical education, hackneyed though it be, is bound to be pressed upon the attention of the profession so long as the science of medicine is one that must be acquired by study, research and painstaking toil, and one that is constantly extending, widening and deepening its boundaries with ever increasing advancement.

The course pursued by many college faculties, of receiving into their lecture-rooms persons ignorant of the common branches of education, and ineradicably stupid withal, has and should receive the sharpest censure. The published requirements that the candidates should come with a diploma or certificate of some literary institution, or undergo an examination in the literary branches, are so seldom acted upon that large numbers of persons engage in the study of medicine in this country every year wholly unfit and unworthy to do so. If this practice shall continue, I believe that it would be wise that a law should be passed compelling examinations of applicants before the County Boards of School Examiners, and the possession of a certificate of qualification, before they should be received by any college faculty as students.

We insist that teachers in our common schools shall

possess these requirements, and this when only a matter of learning is concerned; how much more should we insist upon these requirements where matters of life and death are the goal to which the candidates are advancing. This prerequisite being furnished by each applicant, faculties could go forward and erect on this solid foundation the temple of medical education which should make the recipient, the college and community feel that ignorance and incompetence had finished their day in the medical profession. The length of time of study, and the number of lecture terms also, which the student of to-day shall have, cannot be judged by the requirements of a half century ago. The field of educational medicine has so broadened, deepened and extended that it cannot be contained in the periods of those days. Public attention is being directed to these matters quite markedly at present, and while many colleges have recognized these facts and come up to the requirements of to-day, others are still derelict. But the time will soon come when the practices spoken of must cease, or legislative action will be invoked to correct them.

The Statute Books of the State of Ohio are almost barren of laws calculated to repress the evils of quacks and quackery. But two such laws with slight amendments now exist. These might be of considerable value if their provisions could be enforced with any ease or certainty. But as it is, they are little else than mere dead letters on the Statute Books. In the efforts heretofore made to secure appropriate legislation upon this matter, through this Society or in other ways, too much has been asked for—the proposed laws have been too sweeping for a beginning; not that they were not right and proper, but that they were too radical for the tender feelings of the members of the Legislature, and hence there was a failure to obtain anything. My worthy neighbor and medical friend, Dr. W. W. Jones, in a paper upon this subject

read before this Society at its last meeting, suggests that the statutes be so amended that every practitioner of medicine and surgery be required to record his diploma or certificate "in the office of the County Recorder of the county in which he resides, and where such person practices upon, or by public notice or advertisement in other counties than the one in which he resides, he shall record the same in each county in which he may so practice or advertise." This, as a beginning chapter of laws upon this subject, would, no doubt, be readily passed by any Legislature and would effect much good.

Such a simple enactment as this would unquestionably do much towards ridding our state of the medical tramps who now rove through our borders, vaunting themselves and their cures while plundering the poor and ignorant, who appear to be their especial prey. I suggest nothing further for the present, except that the diploma, certificate or other evidence of qualification shall be such as to enable the County Recorder to know that the applicant is sufficiently educated and qualified in the science of medicine to enable him to properly practice it.

Upon the adoption of such a statute the time would soon come when communities would be free from the quacks and plunderers who now patrol our state.

If there is anything new or different in this paper from the usual recommendations of the average President's address, it is to suggest to you, my brothers, that all of us are but students of older growth than they who are in colleges and preceptors' offices. The grand march of our profession is so rapid that he who does not avail himself of the journals, the instruction of societies, indeed, of all methods which may increase his knowledge, will find himself cast off and forgotten by the mighty army in the profession who are pressing forward to the goal of perfection in medical information. We should count that day lost which does not add something to our knowledge or to the

grand sum of information. The book of nature is ever open to its students, who there find "sermons in stones, lessons in running brooks and good in everything." The opening flower, the falling leaf, the bright sunshine, the maddening storm, the silent wood, the fierce volcano, the gentle breeze, the wild cyclone, the babbling brook and the mighty rush of ocean, all have a language and a lesson which the sufficiently learned can read and understand. So our art, with its ever changing phases, speaks to us in her mysterious tongue. Do we always have the education and intelligence to understand her? The questions of life and death are constantly in our keeping. Do we always give these solemn matters due and honest attention? If we do, then are we always students for life. For the ever varying phases of disease and differences in individuals make each case more or less a study by itself, requiring constant watchfulness and judgment. These varying conditions, and the grand march of new methods and new remedies, render untiring zeal necessary in our profession. "Excelsior! Ever Onward, Ever Upward," should be the motto of every conscientious physician.

Your attention is called for a moment to the subject of professional fraternity. The 'Code of Ethics,' that book of lessons for the government of the profession, is doubtless familiar to you all. Its teachings are worthy of implicit obedience, and if fully observed, none of us can greatly err. It speaks of our duties in the plain spirit of fairness and justice however, while a sentiment warmer and brighter than either should exist between the members of our profession. No person on earth so lifts the veil from poor, weak human nature and enters into her inmost temples as does the physician. Here, "the world forgetting and by the world forgot," we exchange thoughts and ideas, and converse in a tongue unknown to those not of us. In the discharge of our daily duties, the lives of our patrons are often, as it were, in the hollow of our hands,

and courage equal to that necessary on the battle-field is required of us. Neither storm nor tempest, neither heat nor cold, nor night or fatigue, can excuse us from the exactions of professional duty—the calls of suffering humanity. Hail and adieu is often all the salutations we can exchange as we pass one another when hurrying to beds of sickness and suffering. If "a fellow feeling makes us wondrous kind," speaking in regard to the ordinary relations of life, how much more should it do so with us who pass through life, veiled prophets, as it were, walking in a valley which the great world knows little of, or seldom enters even its outer confines.

Not merely fairness and justice should be our code, but the open heart to guide and counsel and the out-stretched hand to sustain and support each other as we journey through our professional lives. Such a creed fully carried out would banish all differences and jealousies; aye more, it would not only cement the golden band of professional fellowship, but would place our names where the vision placed the name of Abou Ben Adhem—foremost among those who love their fellow-men.

RADICAL CURE OF HERNIA.

A. W. RIDENOUR, M. D., MASSILLON, O.

Ruptures are numerous—about one in five persons is so afflicted. Hereditary influence is a strong predisposing cause. Occupation is another. Among the exciting causes may be mentioned heavy lifting, straining, coughing and sudden change of position from horizontal to upright. For our purpose we will recognize oblique inguinal, femoral, direct and umbilical, the two first being the most frequently met with.

In recent cases of the first-named variety we will find an internal ring, a canal and an external ring, besides the proper coverings. In *old* cases of the same we will find but one opening, with the pillars for boundaries (the oblique and transversalis muscles), the canal and internal ring being crowded down to the pillars.

In the direct variety the pillars form the opening bounding proper, first and last. In treating old cases, therefore, of either variety, we will recognize the pillars as the key to our proper success, and it is as well to bear this in mind.

The diagnosis of either is easy. In femoral hernia we find Gimbernat's ligament enters into the formation of the external opening, but from the very nature—inelasticity, with little adhesiveness of the structures entering into the formation of the opening—great care is needed in our attempts at closure.

Umbilical hernia has an opening readily recognized and

readily closed. The prognosis in all hernias is always unfavorable without treatment; nature does not cure a protrusion, but, unaided by art, she soon abandons the fight and the case goes from bad to worse. But happily *art* steps in and renders the prognosis *favorable*.

From early times to the present, various modes of treating rupture by outside pressure and cutting have been adopted; more recently injections of various substances into the canal and openings have been tried. *All* the methods have had their advocates, and it would be unjust to add without cures. Many cases of rupture in children, for instance, have been cured by the early application of a well fitting truss, and we have the authority of the late Dr. Wood of New York, in favor of his method of invagination of canal and skin by sutures, he having been successful in some few instances. Dr. Heaton claims to have cured over three thousand cases by injection of *Quercus alba* into the canal. However, others have been unsuccessful with this method and it has fallen into disrepute; and when we study carefully the anatomical structure and changes that take place in *old* cases, especially where the canal is obliterated, and the kind of tissue *lining* the canal—in recent cases—where the *adhesive* inflammatory process takes place—the necessarily weak and uncertain adhesions—where a peritoneal boundary is universal, we are *forced* to the conclusion that Dr. Wood's and Dr. Heaton's methods will *not* permanently prevent a rupture from returning. We *do know* that adhesion between muscular fibre is *firmer* than between membranous structure, and when to that is added granulation tissue, cicatrix and the closure of opening with removal of sac, we certainly feel justified in emphasizing the statement that only recently have surgeons begun to search in the proper manner for the solution of this problem.

That the radical treatment of hernia to-day involves the cutting process, need deter no surgeon from attempting it

who is a practical operator; neither need it deter the patient from placing his case in the hands of that operator, for the *reason* that antiseptic surgery has rendered safe what formerly was considered a dangerous operation.

The old statistics placed the mortality in *strangulated* hernia operations at 68 per cent. (Connor). I will say now, without fear of successful contradiction, that this excessive mortality is reduced by good, practiced surgeons, who use strict antiseptics, to not more than one per cent. I take it that every surgeon who makes these operations *instructs* his neighboring physicians to have operations for *strangulated* hernia *made early*, before sphacelation sets in. The mortality after operations for radical cure where strangulation does not exist is *less* than one per cent.

The surgeons who have been engaged in making the radical cure operation by the cutting method have been paying the most attention to the treatment of the sac. I will endeavor to impress on your minds this fact, that while it is proper to devote all the attention to the *sac* that has been paid to it, yet I consider the attention to the *proper closure* of the opening into the *abdominal cavity* the *key* to the success, as I stated before. In general, then—

1. The sac may be reduced within the abdominal cavity.

2. It may be left in the canal when firm adhesions prevent its safe return.

3. It may be ligatured, the hernial investment amputated and stump returned.

4. It may be ligatured, amputated and then invaginated in the canal.

5. It may be drawn up upon itself, fixed as a bulwark against the internal ring.

6. It may be twisted upon itself and left in the canal.

7. It may be interwoven into the fibrous structure of the pillars.

Riesel ties the sac as high up as possible, leaving the sac below point of ligature help fill the distended canal.

Nusbaum, Sewel and Czerny tie the sac high up, but remove the sac below the point of ligature.

Mitchell Banks was one of the first to favor this latter method. Ball favors twisting the sac, and leaving it in the canal. Bryant interweaves it in the pillars. Macewen fixes it within the internal ring. My own practice has been to deal with the sac as circumstances require. I may mention, however, that in *females* my practice is to *always* pull down the sac beyond point where it is organized—after separating adhesions, if present, ligate, cut off and *remove all below;* return stump into *cavity* of abdomen, after assuring myself that all bleeding has ceased.

In the male, in recent cases, where the hernia is not *scrotal*, the same rule obtains. In scrotal hernia, with adhesions to tunica vaginalis and epididymis, I either leave *that portion* of sac intact or remove testicle; this in old cases and in old people exclusively, with their previous consent; otherwise leave that portion of sac; cut, dissect loose about one or two inches beyond opening, tie, cut off and return. The sac being an important factor, therefore it is necessary to understand that while, in very recent cases, there is not much change in its structure from peritoneum proper, yet sooner or later it becomes an organized body separated from parent peritoneum, thicker, with more numerous vessels; the point at which organization begins is at the internal ring. Adhesions soon form, which, in old cases, are sometimes difficult to separate when the form is *scrotal* and to epididymis, but not difficult to separate from connective tissue in the female or tunica vaginalis in the male. Occasionally you will meet with cases where a portion of omentum is adherent to *sac*. In all such cases it is better to ligate the omentum with the sac, tying all vessels after the removal of stump. Otherwise, when you separate the omental adhesions you

will have bleeding within the cavity, which will endanger the life of your patient. When adhesions form to the spermatic vessels, considerable care is necessary in separating them, especially the cord and its accompanying artery and vein.

As above stated, it is, in my opinion, necessary to success that *all sac*, *all connective tissue* and *even all* the tunica vaginalis, save the floor where the cord and vessels lie, should *be* removed at the point where we wish to close the opening, bring bare muscle together, and this only after *freshening* up by scraping, incising and otherwise mutilating so that union will be firm. I hope I am rightly understood, as this is the *key* to the success. You want to efface as much as possible all semblance of an *opening* or *canal;* allow nothing that will form a focus for the concentrated energies of the bowels to begin work upon.

Dr. Banks of Liverpool was the first to advocate *silver wire* in closing the opening, but I believe he only used one suture of wire. Others use silk, catgut, silk-worm, and one or two advocate open wound treatment without any closure at all.

In recent cases where I find the internal ring, canal and external ring, I pull down the internal ring and with curved scissors remove all but the floor in the male and *all* in the female. Remove the boundaries of canal in same manner and all but the muscular pillars of the external opening. If femoral, freshen Gimbernat's ligament as best I can, although do not rely much on its adhesive power, but will state right here that I endeavor to close the femoral opening permanently by passing silver wire deeply, including pillars, Poupart's and Gimbernat's ligaments. Silver wire then, is what I rely on to close the opening. Objection has been made by one eminent authority that the suture either cuts through or does not hold after the first few days. A little cutting takes place

at first in a few cases, but as soon as the muscular fibres have united, all irritation ceases and the wires remain to *act* as a *bulwark* against any sudden attempt at rupture by violence in future. This I know to be a fact from personal experience repeatedly. I pass one silver wire entirely around internal ring in the female, avoiding the floor of same in the male. Pass another around canal half inch from first with *same precautions*, another half inch from second and so on to external opening; here, instead of using one, I sometimes use two or even three of the pillars, one widely separated and short, from *above downward* instead of from behind forward, as in the canal. *All* the sutures I *pass deeply*, entirely surrounding the pillars. In some instances I use four, in others five or even six silver sutures. My usual method has been to cut off the twisted end and double it on itself—point in itself—so as to prevent irritation from sharp points, and closing wound over the wires, first by *deep* silk-worm gut but including skin—for facility in removing—placed at three-fourths inches apart, finally closing skin with continuous catgut suture.

One prominent surgeon of New York, Dr. McBurney, attaches the integument of each side to the pillars of the ring—or adjoining—allowing the bottom of the wound to granulate.

Now, after the *bowel* once makes an inroad on the pillars and they begin to separate, no amount of granulation tissue *or cicatrix outside* will prevent the bowel from showing up; while it may not go through the tissue, it will go *around* it—like a celebrated general of the late war—and the bowel is just as stubborn to manage after it takes the field. Or, if you like, notice the breaking of a mill-dam—first a weak spot, a *drop* or *two* more, finally one grand giving way of the whole. You might fill up the real course with *solid gold* below, but the water would take to the fields and woods. I might add that all preparation

of patient, the operation and subsequent dressing, is *strictly antiseptic.*

The last operation I modified the treatment of the wire by using *perforated shot* instead of bending the ends of the twisted wire, pressed the shot down, and closed perforation with strong forceps.

I do not use *tight* dressings at any time after; neither do I allow my patients to wear any "belly band" afterwards, not even corsets, which last press the bowels down, and place a *vis-a-tergo* force in motion continuously. Of course, you will have the ladies object to this, but your aim is to cure your patient.

I have made thirty-eight cutting operations for hernia in all, twenty-five for *pure* radical cure and five for radical cure with strangulated hernia, and eight old-fashioned operations for simple strangulation before I began the radical cure method. My first operation for strangulated hernia dates back to 1869. My first operation for radical cure was made in June, 1883, and this patient a young, robust man, who wears no truss to this day, and works hard.

I have had no deaths as yet, either in my strangulated hernia operations or for radical cure. I opened the sac in every case of my early operations for strangulation, and to that I attribute my success, as in several cases I found adherent omentum to wall of sac, with bowel bound down between the mass (intussusception of omentum and bowels), which would have resulted in death had I not opened the sac and discovered it; one of those cases, you know, where "the operation was a glorious success, a brilliant operation, but the patient died afterward from some internal complication."

Four cases do not wear a truss—no protrusion three years after operation. One case of rupture returned; after six months, did not use silver wire. Did not complete the operation, as I do now. The majority of my cases are not over one or two years old, that is, since

operation, and ten are within the past year; six are double operations. I find it just as easy for the patient to operate on both sides as one. Six were ladies; one a little boy six years old. One failure before using silver wire, *none since*; but then it is proper to add that some of the cases were operated on quite recently, for instance, four since January, 1888. But very little pain or fever follows the operation, and in the majority of cases I get primary union in five to seven days. I find these cases do as well ultimately as the others, when the wound opens slightly.

One old gentleman, 67, operated on in April, was only able to remove upper part of sac, scrotal hernia, varicocele, hydrocele, enormous hypertrophy of all parts with great opening—2 by 2½ inches. Left lower part sac, removed three spermatic veins by ligature at two different points, two inches apart, cutting out intervening portion to cure the varicocele; removal of part of tunica vaginalis to cure the hydrocele; applied five silver wires to pillars, shotted same, closed and dressed wound as usual. Patient is doing well; will preserve testicle and probably cure rupture; operated on other side at same time for single rupture. This patient was still all right on June 10, 1888.

In an operation for strangulated umbilical hernia last summer, bowel and omentum were present; tumor size of fetal head adherent all around; dissected loose all omental adhesion; ligated and cut off same; replaced bowel, ligated and cut off sac, putting back into cavity after assuring myself that all bleeding points were tied; freshened up opening with scissors, closed same with silver wire, and patient recovered without fever or pain, and no return of rupture.

I say, therefore, that we should encourage operations in young or old, male or female.

THE RADICAL CURE OF HERNIA.

BY DUDLEY P. ALLEN, M. D., CLEVELAND, O.

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The object of this paper will be to consider briefly the importance of some procedure for the cure of hernia, and the difficulties to be overcome in its accomplishment; also, to present two unusual cases successfully operated upon.

It is no part of our purpose to enter upon a history of the various methods that have been proposed, through all the centuries, for the cure of hernia. The modern development of abdominal surgery places operations for the cure of hernia upon a new basis. The history of operations as at present practiced dates back but a few years. That some method of cure is of great importance is evident. The frequency of the deformity and the dangers to which its possessors are subjected are known to all. Certainly there are few ailments which so impair the comfort and endanger the life of mankind.

Innumerable methods of cure have been proposed. The method of Wood of London, of suturing the pillars with a silver wire, is perhaps the most successful of those which propose to relieve the difficulty without opening the abdominal cavity.

Since the simple opening of the abdomen entails so little danger *per se*, the method of Mr. Wood has lost

what was the chief argument for its support. Two methods may properly claim our attention at the present time: First, that of opening the abdomen, dissecting from its attachments the hernial sac, and, folding this upon itself, return it within the abdominal walls, so that, resting just outside of the peritoneum, it makes a convexity where the hernia formerly existed. This is the well-known method of Macewen of Glasgow. Second, the method of extirpating the hernial sac by ligation, as close as possible to the peritoneal cavity, and uniting the opening in the abdominal wall. This method has been presented by Lucas Championnière of Paris, perhaps as carefully as by anyone.

It would be interesting to compare the opinions of these two most eminent surgeons on those points in which they agree and also those in which they differ, but this would take us beyond the limit which we have assigned ourselves. We shall presuppose that those of this body who are interested in the subject of operations for the radical cure of hernia are already familiar with the methods in vogue, and we shall proceed to the consideration of those points in the operation upon which depend success or failure.

The chief dangers in operations for the radical cure of hernia have been considered to be those dependent upon opening the abdominal cavity. Peritonitis is as fatal now as at any time in the history of surgery, and we suspect as frequent, if not more so. Adherent omentum and intestines may seriously complicate operations. These are difficulties, however, which can be overcome successfully by operators skilled in the technique of abdominal operations. We do not wish to be understood to underestimate the dangers of the operation in incompetent hands. Personally, we are doubtful if the length of life of the human race has, up to the present time, been prolonged by the various

operations practiced upon the abdomen. Laparotomy has come to be looked upon as so devoid of danger that it is performed by anyone who chances to meet with a case which he thinks may possibly require it, and this too without a familiarity with those details and a knowledge of possible complications which make operation safe.

We do not believe anyone should undertake to operate for the radical cure of hernia who is not a competent operator in the whole field of laparotomy.

The difficulty inherent in all operations for the radical cure of hernia is in forming a new wall sufficiently strong to resist the impulse of the gut against it. What the power of the gut is to force itself through any aperture, however small, was remarkably illustrated to us in a laparotomy upon a fat woman, in whom complete anæsthesia was difficult to obtain. In pushing the hand down to the loins for the purpose of feeling the kidneys, the fingers were repeatedly separated from each other by the intestines forcing themselves between them, and it was absolutely impossible to hold the fingers together. It is thus evident that if any depression or weakness remains at the point of operation, the gut will be liable to force itself into this and cause recurrence of the hernia. How these difficulties may best be overcome will be considered a little later. It may be proper now to consider the important points connected with the operation. To have the gut free from air and fæces is of great convenience to the operator, preventing the tendency of the gut to escape from the opening of the hernia while operating. In operating for hernia, as well as in all laparotomies, it is well to give a full dose of castor oil twenty-four hours before operating. Follow this by an enema at the time of the first passage from the bowels, and again two or three hours before the operation. After administering the oil give only an easily assimilated diet, and given othing beyond a cup

of broth on the morning of the operation. The patient should be scrupulously clean, and the parts to be operated upon should be most thoroughly washed, shaved, and washed again, and then disinfected and surrounded by towels soaked in a disinfectant. To discuss the question of antiseptics in connection with this operation would take us too far. It is our belief that its relation to this operation is the same as to other laparotomies. Perhaps it is more important since the surroundings are especially prolific of secretory and septic material. While we do not say that the employment of antiseptics is an absolute necessity, we do consider them highly desirable. By this we mean an antisepsis which is rigorous and complete in every detail.

In operating, a complete anæsthesia is of great importance, since, if incomplete, the escape of abdominal contents from the ring may at any moment seriously embarrass the operator.

The complete dissection of the sac of the hernia from its surroundings is desirable. If the lower part of the sac remains *in situ*, it may form a cyst. The removal of the upper portion is highly important, since if this is not done, it prevents the formation of as firm a cicatrix as would otherwise be obtained.

The opening of the sac has been looked upon by some as a thing to be avoided. We believe emphatically that it should be opened. The increased danger from this we believe to be *nil*. By opening it, the operator is enabled to see whether or no there are adhesions of gut or omentum, and successfully to care for them.

It is our practice in operating to open the sac of the hernia about an inch below the abdominal opening, see that it is empty, and then to separate this part of the sac from its surroundings and from the cord, and clamp it with a pair of forceps above the point where it is opened. Thus the abdominal cavity is closed, and the operator can

proceed to loosen the adhesions of the remaining portion of the sac. The dissection of the sac from the surrounding tissues and from the cord is usually not difficult, and we have commonly succeeded best in performing it with the finger nail. By this means, keeping close to the sac, the hemorrhage is, as a rule, slight. Occasionally, when there has been inflammation, the adhesions are very firm and the process is difficult and dangerous, since the *vas deferens*, or even the femoral vein, may be injured.

If an undescended testicle be encountered, it may be removed, since these are found to be without function. Not unfrequently a large mass of omentum is found in the sac, either free or adherent. We have met adherent omentum, especially in cases of strangulated hernia, which had not been entirely reduced for a considerable time. In such cases we have noticed that the portion of omentum situated at the ring was constricted and in some cases atrophied and closely adherent to the ring. In one case of ventral hernia, there was an immense mass of omentum contained in and adherent to the sac. The portion situated at the ring was firmly adherent and reduced to a fibrous mass, the protruding omentum being wholly nourished from its adhesions. It is worthy of consideration whether, if this protruding omentum be reduced, it may not be a leading factor in causing a return of the hernia.

In the case of the young man whom we shall show you, we removed a mass of omentum as large as the fist, and we have removed smaller masses at various times, and we cannot see that the amputation of such portions of omentum complicates the operation. Care must be taken, however, to ligate the omentum very securely, by one or, if necessary, several ligatures. A friend told us of a case in which he had failed to do so. Serious hemorrhage had ensued. To secure the bleeding portion it was finally necessary to open the abdomen, and the omentum was found retracted to the level of the umbilicus.

Adhesions of gut, if firm, are dangerous. We have never met with any but light adhesions, which could be separated without danger, and the gut returned. Should they be present, the removal of the portion of the sac to which the gut is adherent would be desirable if possible, and the returning of this with the gut to the abdominal cavity. The treatment of the sac itself is a point giving rise to much discussion. The plan of Macewen, to dissect it free from all adhesions, transfix it with a catgut suture and draw it upward inside the abdominal ring but outside the peritoneal cavity, has given in the hands of its originator excellent results. Whether this success is not due as much to the care with which he loosens up the peritoneum about the internal ring and closes the ring itself is in doubt among many operators. After seeing Mr. Macewen's surgical methods, we must say that we have formed for them the very highest esteem, having seen very few surgeons so full of resource and sound reasoning. Other eminent surgeons, however, prefer to extirpate the sac entirely, ligating it as high up as possible.

Whatever method be chosen, there are two important points in connection with the treatment of the sac: First, it should be freed thoroughly from the ring, and for a distance about its upper margin; second, whether left as a convex mass above the internal ring or cut off, no depression should be left above the ring. If the sac is excised, the peritoneum should be pulled down as firmly as possible before being ligated, and the ligature should be placed as high as possible, so that when the peritoneum retracts no depression may remain. Should a depression remain, there is a liability that it will constantly be deepened by the pressure of the gut upon it. For suture of the sac, we believe catgut to be the best material.

The closure of the rings is all important. Shall we seek to close them by first intention or by granulation?

The weight of opinion is certainly in favor of closing them by first intention, it being held that a cicatrix formed by first intention is firmer than one formed by granulation.

The first operation which we performed for the radical cure of hernia was on May 14, 1885. This was before the publication of Macewen's cases or those of Lucas Championnière; in fact, up to this time, we had noticed nothing with reference to the closure of the rings. The method of operation we adopted was to close the opening in the peritoneum with a catgut ligature, then unite the pillars of the ring with interrupted silk sutures, leaving one end long. A drainage tube was inserted to just outside of the united pillars, and the superficial parts were united by interrupted sutures. An antiseptic dressing was applied and continued for about one week. This was then removed, and the wound allowed to suppurate. We argued that at the end of a week the peritoneal cavity would be effectually closed against all danger from suppuration, and that by allowing suppuration a larger cicatricial mass would be formed to resist a return of a hernia. As the sutures loosened they were drawn away. Perhaps this is not the best way. We certainly must defer to the experience of abler surgeons than ourselves in this matter. We do not hesitate to claim, however, that this is a good method. Certainly no case can be a severer test of a method than the one we show you here to-day, and it is to illustrate this very point, namely, that cicatrices formed by suppuration are firm, that we have brought you this case.

The important point in the suture of the pillars is to approximate them thoroughly. To accomplish this, we believe methods must be varied according to cases. In some we have found approximation easy. In others the rings have been tense and approximated with difficulty. We strongly suspect that in some cases the sutures cut

through the tissues in which they are embedded, for we have found on tying our sutures considerable resistance to the drawing of the pillars of the ring together, and it is a rule that tissues held tensely by sutures are cut by them. All we can say is that the uniting of the pillars by interrupted sutures, leaving one end long, dressing the wound antiseptically until the abdominal cavity has been thoroughly closed, and then allowing the wound to heal by granulation, pulling away the sutures as they become loosened, has secured for us satisfactory results.

Drainage we believe to be desirable. Though the wounds may heal without danger of retained secretions, the possibility of such secretion pushing its way toward the abdominal cavity, if present, would indicate measures to avoid such a serious complication.

The superficial sutures should approximate the tissues accurately. The application of dressings is a matter that should receive most careful attention, since if poorly applied, what might have given a good result may end in failure. Dressings should be ample and firmly held by a spica bandage, in order to secure equable pressure upon the wound. By slightly flexing the leg in applying the dressings and bandage, and, on putting the patient to bed, raising the head and laying the leg on the pillow, there is less tension on the sutures uniting the pillars, and the parts are kept at rest and firmly in apposition.

We believe iodoform and hygroscopic gauze to be the best dressing. The gauze is applied dry and thoroughly impregnated with iodoform. This absorbs all secretions and forms an admirable dressing. It is good practice to remove this in from three to four days, or sooner if saturated with secretions, since it permits one to see whether the wound is in proper condition, and also permits the removal of the drainage tube.

Too great haste in leaving the bed is a grave error. We should prefer that a patient remain in bed a couple

of weeks after the wound has healed, and then that he should get up very carefully and gradually, believing that thus a firm cicatrix is more sure.

The application of a truss after an operation we believe to be good practice. One case we show you has never worn a truss: the other has one on to-day. Many cases never require a truss, but if a good-sized soft truss be worn for a time, it can do no harm, and it is an added safeguard against the early yielding of the newly formed and soft cicatrix to the pressure of the abdominal contents.

The prognosis in case of operation for the radical cure of hernia we believe to be good. The danger to life, in the hands of an operator competent to perform laparotomy, is slight. It is certainly less than are the dangers incident to the hernia itself, especially if not thoroughly controlled by a truss. If an uncontrolled hernia be simply changed by operation to one easily controlled by a truss, it is worth the risk of operation.

What cases shall be operated upon?

That all cases of strangulated hernia that cannot be reduced should be operated goes without saying. We believe that the radical cure should be applied to such cases unless contradicted by especial obstacles, such as the gangrenous condition of the intestines, etc. Cases, not strangulated, complicated by such general conditions as diabetes, tuberculosis, infirmity and old age, should not be operated. In infants, only strangulated, irreducible and uncontrollable herniæ should be operated, since those which can be retained by a truss tend to recovery. All uncontrollable cases in adults in good health should be operated. Without it, the future of the patient is a sad one indeed. We believe that irreducible though unstrangulated herniæ in adults should be operated. Undoubtedly such cases frequently fill out their full lease of years, but many such cases result fatally. We believe a considerable number of such

cases, if not a majority, to be due to protruding omentum, held by adhesions. In an operation, as has been said, this can be amputated with little danger. A case of this sort, living within reach of skillful surgical aid, is not so grave as one lacking it; but we believe all such cases would run less risk from operation than from strangulation. In vigorous young men, having herniæ held by a truss which causes pain or retains a hernia unsatisfactorily, especially if these difficulties are increasing, we should favor operation.

We are not prepared to advocate the radical cure for hernia in all vigorous adults, but we believe that the tendency of good surgery is to extend the limits of the operation.

In concluding our paper, we would present to you two cases to illustrate two unusually difficult and rare cases of radical cure. The first is of a boy, operated December 9, 1886, at the age of two years and one month. The case was one of inguinal hernia and could not be controlled after the most persistent efforts. The radical cure was performed by the method described. The case progressed without fever, and in all respects satisfactorily. Was kept in bed a considerable time and then allowed to get up with a pad kept over the seat of the wound, held by a cotton flannel band about the pelvis, with a perineal band of the same material. In August, 1887, eight months from the time of operation, boy seemed perfectly cured, when he had a sharp fall; he was noticed to place his hand at once at the seat of the rupture. Several days later a slight bulging was noticed. The boy was placed in bed. Tinct. Iodine Co. M. xv was injected at seat of the bulging, and when the tenderness had subsided a water-pad truss was applied. The case at the present time (June, 1888) seems to be perfectly cured, but the truss will be continued for some time to come, to guard against dangers. So far as we know, few if any cases so young have been successfully oper-

ated. Fortunately, the operation is rarely indicated, since most cases can be controlled with a truss, and are thus cured.

The second case we present was operated May 14, 1885. We have desisted thus long from publishing the case that the permanence of the cure might be indisputably established. The patient, æt. 25, had a congenital left inguinal hernia, the largest we have ever seen, hanging down a third the length of the thigh. This could apparently be entirely reduced, and the scrotum could be invaginated and the wide open hand could be passed upward into the abdomen as far as the umbilicus. The opening was enormous. The hernial sac was opened, and though before operating we had apparently returned the intestines to the abdominal cavity, it was found that many feet of collapsed intestine remained in the sac, the intestinal contents alone having been returned. The wall of the sac was so much thickened as to obscure the presence of the intestines. The operation for the radical cure was performed essentially as described. The cavity formed by the enucleation of the sac was so large, and obliterated with such difficulty, that a small amount of secretion was retained, causing a small abscess; and a ligature, cut short and retained, caused a continuation of suppuration for a time. Aside from this, the case progressed favorably in every respect. The patient has been doing the heaviest sort of work in a rolling-mill, has never worn a truss, and to-day (June, 1888) is perfectly cured.

TUBERCULAR DIATHESIS.

BY W. C. CHAPMAN, M. D., TOLEDO, O.

The word phthisis, as applied by the older writers, did not convey the idea of a specific form of disease, but merely signified one in which there was a gradual wasting of the various structures of the body. By consent, the term was limited in its application, so as to be seldom, if ever, used in connection with diseases other than of the air passages. Any disease, therefore, of the lungs, which is attended with a progressive wasting of the body, with physical signs of destructive metamorphosis of lung structure, may rightly be called phthisis. In later years there has been a tendency to consider all cases of pulmonary phthisis identical in etiology, progress and termination, this inclination being especially marked since the discovery of the tubercular bacillus by Koch in 1882, so that with many clinicians the presence of the bacillus is the only positive sign of consumption. This opinion should be taken with allowance, for it is probable that many fatal cases may occur where, from the inception to the termination, no specific bacteria are found. It has not been shown that other forms of micro-organisms may not set up changes in the tissues, so that death may be the result; and it has not been proven conclusively that the causes of such destructive changes are the bacteria, which may be shown to exist in the tissue by their presence in sputa, loaded with the products of retrograde metamorphosis.

There is also a tendency to undervalue the influence of an abnormal lowering of the vital forces as a frequen cause of disease, search being made for ?

organism which, circulating in the fluids of the body, breeds pestilence. It is difficult to form a definite conclusion in reference to pulmonary diseases, because of the variance in the theories or demonstrations of pathologists and clinicians. A positive statement of a supposed demonstrated fact becomes worthy of belief only so far as an observer is able to offer proofs that cannot be controverted. Preconceived notions or pet theories too often color the published discoveries of investigators, and those who follow accept blindly, statements made in the flush of enthusiastic delirium.

There are many reasons why pathologists should seize upon the discovery of Koch, of the tubercular bacillus, as solving the problem of the etiology of tuberculosis; for from the time of Klencke, in 1843, down to the asserted discovery of Villemin, twenty-five years thereafter, showing that tuberculosis might be inoculable, all had failed to separate and demonstrate the presence of a particular organism which, when isolated and injected into the tissues, caused tuberculosis, until such was done by Koch and first published to the medical world in March, 1882. That this contagium is the sole cause for the destruction so often observed in lung structure, as well as other organs, is believed by many and doubted by others. Some pathologists assert that nodules, in no manner different from those containing the bacteria, can be formed by the injection of foreign substances which are free from the tubercular virus, and clinical observers report cases where both death and recovery occur without the presence of the bacteria being made known by any tests considered reliable.

It is not the purpose of this paper to enter into a discussion of the organisms or foreign substances which are said to produce phthisis when once they enter the tissues, but as briefly as possible to consider some of the reasons why, in a given number of persons, some will receive

and develop the infectious material, and others with like exposure are entirely insusceptible. Pathologists believe with reason that the exciting causes have been discovered; the tissues to be acted upon are known, but why, when these two factors are brought together, disease does not always, or in a majority of cases, develop, is not yet settled. All are agreed that there must be a predisposition inherent in the subject before such development can take place. The soil must be suitable before the seed can germinate and grow.

It is with the hope of drawing attention to conditions frequently observed, which seem to be prominently concerned in the etiology of phthisis, preparing the soil for a development of the after implanted seed, that this brief paper is written. Suggestions can only be made—space and time fail for an exhaustive presentation—but direction may be given so that future study may produce conclusive evidence that a predisposition, or diathesis, is a necessity, and may be either hereditary or acquired—the hereditary being a natural weakness, the acquired the result of ignorant remissness or disregard of nature's requirements. It may be said that a specific contagium is necessary for the development of phthisis, either tubercular or otherwise; it is equally true that, unless there is a soil suitably prepared, no germ of the disease can remain alive to develop itself at the expense of that soil. There is danger that all attention may be given to the seed, whilst the conditions suitable for its growth may be overlooked.

It is a conceded fact that the forerunner of phthisis is a condition of malnutrition. The vital forces being notably below par, are not able to carry on physiological action so that pathological changes may be prevented. If the physiological equilibrium is overcome, then will pathological action begin preparing the soil for the growing of destructive organisms. When force r

force then must the stronger assert itself; death only comes from the overpowering of life.

As in phthisis, the lungs are nearly always the seat of primary retrogression, and as they are not only the organs by which an interchange of elements in the circulating blood is accomplished, but control, to a large extent, the pulmonary and systemic circulation as well, a brief reference to their normal action will make manifest the forces that may be potent to render such action abnormal.

Remembering that the lungs are enclosed by a wall more or less firm in structure, and that they, together with the heart, esophagus and larger blood vessels, completely fill the space thereby surrounded, it becomes apparent that there must be an enlargement of this space that air may enter, which, having done its work, must be expelled by a reverse action, that of collapse. In life these two movements are so rhythmical as to be considered indicative of health only when observed within certain limits.

In inspiration the act is performed by muscular effort compelling the air vesicles to dilate; in expiration the muscular and lung tissues expel the air by the force of their elasticity, no muscular force being required. Respiration thus goes on automatically, being only to a limited extent controlled by the will. If now by the enfeeblement of the muscular force of the walls, or by reason of the inelasticity of the air vesicles, air cannot be conveyed into the lungs in sufficient quantity to allow of the proper interchange of elements and the expulsion of effete material thereafter, then must death take place in the portion so impaired.

The lower portion of the thorax being capable of greater movements than the apex, by reason of its form, as well as by the easy depression of the diaphragm, the direction of the ingoing current of air must be, for mechanical reasons, toward the base of the lung. The apex being surrounded by almost immovable bone structures,

cannot possibly draw to it a proportionate amount of air, so it is reasonable to suppose that a deficiency would be noticed here first in a great majority of cases, deep and frequently repeated inspirations being required to fully dilate the vesicles of that locality. It is well known that a greater number of cases of consumption are discovered incipiently affecting one or both apices, and consolidation of the left apex is more frequently conclusive of that disease, for by the anatomical arrangement of the left bronchus the air is more readily deflected toward the base of the lung of that side. Statistics show that more men die from tubercular, as well as other forms of phthisis, than women; the abdominal respiration of the former tends to a drawing of air into the base of the lung, whilst the more typical thoracic breathing of the latter tends to a more complete aeration of the apex. Professor Mosso has shown that the lung capacity is almost one-fourth larger than necessary to keep up the necessary aeration at the sea level. This being the fact, those portions of the lung more easily supplied will receive and expel more air proportionately than those which are more difficult of access. So that in ordinary respiration the apices may be entirely passive, expansion of their vesicles not taking place as fully or regularly as necessary to keep up normal respiration. A potent factor, therefore, in the etiology of phthisis is the lack of proper expansion of the whole lung. Apicial as well as basilar expansion is necessary for a perfectly healthy pulmonary condition.

If the above is true, how does it follow that a mere disuse can lead to such direful consequences, surely destroying both lung structure and life? The answer comes in a further study of the physiology of the respiratory act, as exerting an influence upon the circulation of the blood both within the lungs and systemically. Understanding that between the air vesicles are plexuses formed by the

pulmonary capillaries, forming a minute network upon the walls of the air cells, each group being independent and having its own capillaries, it must be evident that the expansion and collapse of these alveoli must exert a powerful influence over the circulation of the blood in the vessels surrounding them. Coming from the pulmonary artery which conveys venous blood from the right ventricle of the heart to the lungs, these capillaries are lost in the venous capillaries, finally terminating in the pulmonary vein, which carries the arterialized blood to the left auricle to finally pass into the systemic circulation. At the end of expiration, when the intervesicular spaces are enlarged to their fullest extent by the contraction of the alveoli, pressure is removed from the walls of the capillary blood vessels and they are immediately filled. When inspiration begins the spaces are lessened, pressure is brought upon the vessels, and the blood, which had been drawn, must be forced along toward the anastomosing venous capillaries, and at the end of full inspiration they are practically exsanguinated. On collapse of lung during expiration, blood again fills the vessels, and at the beginning of inspiration there is a momentary stasis to be followed by an emptying, as the blood is again urged on by the full inspiratory effort. Thus it is demonstrated that respiration is a potent factor in assisting the *vis-a-tergo* of the heart to not only complete pulmonary circulation but the systemic as well.

As in normal respiration there is an appreciable moment when stasis occurs, any event which tends to prolong that period must be considered as the beginning of pathological change; this change can be occasioned by anatomical malformation or lowered vital activity, whereby certain portions of the lungs are not allowed to expand either fully or in part. It is certain that such absence of movement not only deprives the blood of required oxygen, but

tends to cause a stoppage of the flow, thus preventing proper nutrition and consequently subsequent death.

It is evident that both of these conditions may be hereditary or acquired. Formation of the thorax is well known to be not only a distinctive family inheritance, but may be noticed as a peculiarity in various tribes, according as their manners of living or occupations have required an expansion or contraction of the bone structures. Those persons who are continuously employed in an avocation which requires a drawing forward of the clavicles and a turning inward of the head of the humeri, must of necessity restrict the spaces in which are located the apices of the lungs, and so interfere with their normal expansion. Pigeon-breasts are notable instances of a formation which tends to interfere with insufflation. As a consequence, such conformation is an anatomical inheritance which always predisposes to the development of phthisis. This formation may also be acquired. A youth of either sex may, in the formative stage, be placed in an occupation wherein the lung space may be so encroached upon as to curtail greatly the expansive process. A stooping gait, a poorly nourished body, an enfeebled circulation, soon indicate that the way has been made ready for the implantation of the dread disease.

But can a lowered vital activity be an inheritancy? Certainly; as a man walks as does his father, as he speaks with an inherited voice, so may he, although anatomically well developed, use his respiratory organs with an individuality, a family inheritance. Some breathe deeply by nature; others for lack of energy do not. Such people walk slovenly, work slovenly, have no ambitious longings, but drift along, content to live a shortened life, rather than make the effort to overcome an inherent weakness. So, too, may this habit be acquired. Faulty respiration is often noticed as the result of a vicious mode of breathing, fol-

lowing a disregard of nature's laws; the result an early grave.

Stasis from faulty expansion is the forerunner of coagulative necrosis, leading finally to caseation, the pathological change which renders the implantation and development of phthisis possible.

Granting that the views of a majority of clinicians and pathologists are correct in ascribing the development of phthisis to an implantation of the germs of certain micro-organisms, the only point which has been difficult of explanation is the accounting for the fact that, whilst it is known that such parasitical bodies abound almost everywhere, and that vast numbers of them are daily taken into the human organism in water, food and air, yet in the majority of instances they die and pass away, whilst in others they take root and flourish to full fruition. Future study will, in all probability, demonstrate that the diathesis briefly stated in this paper is the agency whereby is supplied the proper soil, in a condition to be appropriated, into which they implant themselves, and, as do all parasites, develop and multiply at the expense of the tissues, or of the food supply intended for the sustenance of those tissues. "So long as the tissues of a higher animal are healthy and well nourished, the common forms of septic bacteria cannot thrive in immediate contact with it. They can only exist in the intestines, etc., because they find accumulations of lifeless fluids which offer them a suitable nidus. Active living tissues may be said to have antiseptic power, *i. e.*, are able to destroy septic bacteria; and it is only owing to this bactericide power of our textures that we can, with immunity, breathe into our lungs the atmospheric air often crowded with these organisms, and swallow multitudes of them with our food. But for it every wound would become putrid, every breath might admit deadly germs to our blood." (Yeo, 'Manual of Physiology,' page 90.) Granting that this is always true in nonpatho-

genetic bacteria, is it not also true when the so-called pathogenous bacteria invade certain structures? It has been constantly claimed that the bacillus of tuberculosis can of itself, in healthy tissue, implant itself and so generate disease. This assumed fact is here denied. No healthy lung tissue can be susceptible to the invasion of the organism unless previously there has been a local necrosis, forming suitable environment for the life of the parasite. "Clinical experience would seem to indicate that the tubercle bacillus is no ordinary bacterium, such as may enter and affect any organism without distinction. It would seem rather as if infection occurred only when a definite predisposition exists, or where a considerable quantity of virus is introduced. This predisposition may be local as well as general. The local predisposition may perhaps depend mainly on inflammatory change. . . . . Koch finds that the bacilli grow very slowly, and after inoculation proceed to develop and multiply only when they reach a spot where they are not subject to much mechanical disturbance or displacement. From this we may understand how it happens that many persons, though again and again exposed to the invasion of tubercle bacilli, yet remain uninfected. It is, moreover, conceivable that individuals, in whose tissues inflammatory changes have already occurred, are those who are most disposed to tuberculous infection." (Ziegler, 'Text-Book of Pathological Anatomy,' page 180–181). It is, therefore, plain to be seen that, although the tubercle bacillus is classed as a pathogenetic bacterium, there must be a preparation necessary in the locality more commonly selected for the development before such development can occur. "All that is necessary is that a bacterium should reach a spot that affords the conditions for its development. If this occurs, it multiplies and forms colonies and swarms." (Ziegler, page 289.)

The air inhaled being rich in all forms of parasitic life,

passes into and out from the terminal air cells of the healthy lung; but when it attempts to permeate those portions which, by reason of incomplete dilatation, have allowed of the accumulation of *detritus* in the cells themselves, and of coagulative necrosis in the surrounding vascular structures, then do they remain, having found that soil which is suitable for their development; thus it is said: "The peculiarity of the tubercle bacillus is to incorporate itself with a white blood corpuscle and to influence it in such a manner as to convert it into a lymphoid cell of somewhat large proportions. This cell becomes sessile in some part of the body. After awhile new lymphoid cells appear in the vicinity of the first cell, which by this time will have grown to the proportions of a multinuclear giant cell, containing a number of bacilli. As the infection spreads along the periphery, peculiar changes are seen to occur in the centre of the nodule composed of lymphoid cells. The nuclei of the lymphoid and giant cells lose their staining capacity and coagulate into a granular mass. The bacilli contained within them disappear, leaving behind, however, a crop of invisible spores that, transferred to a suitable soil, will readily produce a new growth of bacilli. . . . . The predisposition to infection by the ubiquitous spores of bacillus of tuberculosis is manifestly increased by any kind of deterioration of local or general bodily vigor." (Gerster, 'Aseptic and Antiseptic Surgery,' pp. 264–265.)

That the tubercular bacillus is the only micro-organism that is able to produce the destructive changes noticed in phthisis, has not been proven. There are doubtless other forms of bacteria which, having implanted themselves in the tissues, may be reproduced indefinitely. It is likely that air having been admitted to the necrosed tissues by a rupture of the epithelium, a variety of putrefactive changes may occur, due to the bacterium termo or like septic germs. So that all the symptoms of tuber-

culosis may be noticed without the presence of the bacillus tuberculosis being shown. Therefore, as previously mentioned, phthisis, with all its manifestations, may be proven to exist independently of the bacillus of Koch.

In conclusion it seems plausible, from the showing made in the first part of this paper, that any cause which can interfere with the circulation of the blood in the capillaries of the interalveolar spaces by rendering the air cells insusceptible of dilatation for the development of the septic germs—a plug of mucus, an irritant cough, or an untreated catarrh—may so act upon portions of the lung as to cause a necrosis, into which may be implanted the septic virus.

The limited time which, of necessity, must be given to any subject in any meeting like this, prevents the thorough discussion of all the factors which would seem to make the position taken a conclusive demonstration. The attempt has been made to show that, without the diathesis, the tubercular, as well as other forms of bacteria which may destroy lung tissue, cannot develop or implant themselves; that this diathesis is always a forerunner of pulmonary phthisis, and that, therefore, without it all human beings might breathe the germs without fear of infection.

THE THERAPY OF TUBERCULOSIS PULMONIS.

BY JAMES T. WHITTAKER, M. D., CINCINNATI, O.

It may be said now, without fear of much dispute, that fully five-sevenths of mankind are at some time or other in their lives affected with tuberculosis. Statisticians agree in the statement that one-seventh of mankind actually die of one expression of it, viz., tuberculosis pulmonis. Clinicians may differ as to the number of individuals who recover from pulmonary tuberculosis, or phthisis, as it is commonly called—a vague term that should be abolished—but no clinician who has had abundant opportunities of *post-mortem* observation will maintain that even half the cases succumb to the disease. It is safe to say, as the result of *post-mortem* observation, that the majority of cases recover. Other localizations of tuberculosis, to-wit, basilar meningitis, intestinal and peritoneal tuberculosis, Pott's disease, fungous joint affections, most of the cases of marasmus in childhood, not to invoke the more infrequent invasions of the skin, lymphatics (scrofula), larynx, testicle supra-renal capsules, etc., will certainly fill up the percentage to this enormous proportion. The discovery that all these different and dissimilar diseases, affecting two-thirds of the whole human race, depend upon a single definite and distinctly recognizable cause, ranks in its far-reaching value only next to that of the circulation of the blood.

Six years have now elapsed since Koch, with a chain of evidence more complete than had ever been furnished

in the history of medicine, announced his discovery of the bacillus tuberculosis. All subsequent investigation at competent hands has failed to break it or find a flaw in a single link. The etiology of tuberculosis, so far as the seed of the disease is concerned, has become, meanwhile, a fact as fixed as the circulation of the blood.

But the hope which sprang up at once in the mind of every clinician, and which was even expressed at the start by the eminent discoverer himself, that practical results would naturally issue from a knowledge of the cause of the disease, has not been realized as yet. Tuberculosis pulmonis at least remains as intractable as before, and the natural issues have been hitherto in the direction of prophylaxis diagnosis and prognosis rather than in that of the treatment of the disease, the subject to which we confine our remarks exclusively to-day.

Nevertheless, there can be scientific treatment of tuberculosis which does not take into account the bacillus tuberculosis as the cardinal feature of the disease, and the therapy of the disease in the light of existing knowledge is directed (1) to the continued attempts at the possible destruction of the parasite, or, should that prove to be impossible, (2) to the sterilization or infertilization of the soil in which it grows.

To study the second factor first, it is and always has been recognized that the disease makes its most rapid advances in, as indeed it in the first place picks by preference on, weak and debilitated chests and constitutions and confined avocations. Hence the value in therapy of out-door, lung gymnastics and roborant diet. Sydenham long ago emphasized the value of horseback exercise as, to use his own quaint term, "bearing the bell" over every other means of therapy, and though few would accord it a place as a "specific as valuable as cinchona bark for ague," no one will deny its supreme value in certain cases. It is, in fact, now quite universally con-

ceded that the chief if not the whole benefit of sojourn in high altitudes rests not upon any destructive action of rarefied air upon the bacillus tuberculosis, but upon the increased pulmonary exercise incident to these places.

That dryness of the air is not the main element is proven by the fact that the same immunity of attack is enjoyed by the inhabitants of mountain valleys, about lakes and canals, as in arid regions, provided the elevation be the same; and that freedom from contamination is not the main element is proven by the exemption of the factory workers in cities like Quito, Bogota, Chuquisaca, Cochabamba, Potosi, etc., with populations varying from four thousand to forty thousand souls living in the most unhygienic, often filthy, surroundings, but at elevations of from eight thousand to twelve thousand feet above the sea. At nine thousand feet above the sea the air is diluted one-third in volume, and the necessary demands of the body impose upon the organs of respiration, and circulation has three times the work performed at the level of the sea to accomplish the same purpose. Hirsch quotes from Boussingault an exclamation of wonder at the observation of the muscular strength and skill of the bull-fighters at Quito, nine thousand feet above the sea, and at the endurance of delicate young women in dancing all night at elevations where the celebrated Saussure had hardly strength to make observations from his instruments, and where hardy Alpine guides fell into syncope at the effort of digging a hole in the snow. Yet the celebrated battle of Pinchincha was fought out by the natives at this height. Brehmer fixes the necessary height at the elevation in which natives enjoy immunity from the disease thus: In middle Germany, at least one thousand five hundred feet; in Switzerland, four thousand five hundred to five thousand feet; and at the equator, ten thousand to fourteen thousand feet. The immunity from tuberculosis enjoyed by these people, when compared with the

appalling mortality of prisons, nunneries, counting rooms and factories in our own lands, puts the value of fresh air gymnastics in resisting the invasion of tubercle bacilli in its proper light. Baer remarks that autopsies reveal freedom from tuberculosis only as a rarity—an exception to the rule in the bodies of prisoners; and Ziemssen declares that imprisonment for ten to twenty years means a condemnation to death by tuberculosis.

Fresh air, day and night, is an absolute *sine qua non* not only in prevention, but also in the treatment of tuberculosis of the lungs.

The additional resistance of the body to the invasions of the tubercle bacillus, imparted by food, is best exemplified in the mortality statistics before and after the general introduction of cod liver oil—the food of the highest force value of all foods, with one exception.

Thus the elder Williams, in speaking of the first ten years of his practice—1830–40—remarks that the beneficial effects of treatment were limited to incipient cases, and especially to those who were able, at an early stage, to take long voyages—as to Australia or India. "My general recollection of the histories of the developed disease," he continues, "is that of distressing tragedies, in which no means used seemed to have any power to arrest the malady; and life was rarely prolonged beyond the limit of two years, as signed by Laennec and Louis as the average duration of the life of a consumptive."

Improvement began in the next decade—1840–50—with the administration of a more liberal diet, the use of iodine and, more especially, of a mineral acid—generally nitric acid—but it was only in the latter half of this period, when chemistry began to produce cod-liver oil of sufficient purity and freshness to be fit for the human stomach, that decided change for the better was observed; "and I have no hesitation," to use the language of this conscientious observer, "in stating my conviction that

this agent has done more for the consumptive than all the others put together."

The most conclusive evidence in this direction was furnished by the younger Williams, who succeeded his father in the charge of the Brompton hospital, in observations based on two hundred and fifty cases wintering at foreign health resorts. Of these patients, forty took oil irregularly or not at all, with a duration of life of four years and eight and one-half months, the remainder furnishing a duration of life of eight years for those who died, and nearly nine years for those still living at the time of the observation.

The value of the oil, as well as that of other influences which arrested and cured pulmonary tuberculosis long before the discovery of the tubercle bacillus and its relation to the disease, is attributed solely to the "improving of the bioplasm and constitutional resistance, thereby enabling the various cells to become the destroyers and not the victims of the bacillus." ('Pulmonary Consumption,' Williams, 1887, p. 336).

Debove made recently some reports of remarkable successes with forced feeding, or feeding in excess, in what he called "suralimentation" with different kinds of food; but this method, sooner or later, brings about digestive disturbance which invalidates results. Weir Mitchell's "massage" methods in combination with increased diet is a more scientific suggestion, and is of real value in certain cases.

The food of the highest force value is alcohol. It needs no digestion. It passes quickest of all foods into the circulation; is oxidized at once in the blood and tissues, where it is completely resolved into water and carbonic acid, whereby is liberated force and heat. The combustion or consumption of fifteen grains of alcohol furnishes heat enough to raise in temperature one and one-half gallons of water 1.8° F. So much is called one

caloric, or heat equivalent, of which the body of a healthy man furnishes daily two thousand. In other words, from the food taken by a healthy man is evolved power sufficient to raise the body to a height of six miles. So, a bottle of good Rhine wine, or its equivalent in whisky or brandy, will furnish all the heat the body can produce on a mixed diet. Four tablespoonfuls of cod-liver oil, which is about all that a healthy stomach can handle in a day, will develop but four hundred and fifty-five equivalents of heat, only a little more than half that developed from a bottle of good wine. The superiority of alcohol, as a food, over every other kind is, therefore, a matter of mathematical demonstration. No account is taken in this statement of the fact that alcohol is often the only food that can be absorbed from the stomach in phthisical patients. It need not be said that account is taken of alcohol used solely and exclusively as a food, and not in the excess, which of itself produces disease.

Alcohol, says Ziemssen, in his recent contribution, has become, in the last decades, more and more engrafted into the treatment of tuberculosis, and it deserves, indeed, a prominent place in the therapy of the disease. It acts chiefly on the nervous system, whereby it produces an agreeable feeling of comfort, warmth and strength. It invigorates the muscles, lessens night-sweats, induces sleep and, through refreshment of the central nervous system, improves all the functions through which nerve branches irradiate. Good, strong, red wines, with occasional doses of fine, old cognac, are the forms preferred. Sugar, cinnamon and spices, added to hot potations, are, he declares—and who will doubt it—extremely agreeable to the mucous membranes of tuberculous patients, and are effective agents in preventing and checking diarrhœa. Brehmer, too, finds brandy in proper dose the most effective agent in preventing night-sweats and securing sleep.

But fresh air, cod-liver oil and alcohol are no new songs in the therapy of phthisis. For nearly half a century the place of all these agents has been recognized, but not so amply recognized as now, that we know from the ubiquitous distribution of the bacillus tuberculosis that all men inhale it or ingest it, and the question of attack or of more extensive invasion is a question chiefly of resistance.

Now that we know the cause of tuberculosis, we cannot refrain from continued attempts at its direct destruction. Here we encounter the greatest difficulties at the start. The bacillus tuberculosis is one of the smallest and finest of all the pathogenic bacilli. In this regard, it is exceeded or surpassed only by that of mouse septicæmia. It is also one of the most resistant of all to ordinary destructive agents. Unlike most forms, the bacilli themselves are quite as tenacious of life as the spores. It is cultivated for experimentation with such difficulty that only the very best bacteriologists succeed in making it grow at all. Desiccation for six months only impairs its virulence, which is lost entirely only after the lapse of nine or ten months—a fact which kills the hope that it might perish naturally, because it is a pure parasite and cannot multiply out of the body. Subjection once to a boiling temperature does not affect it, and twice boiled, it suffers but slight loss of pathogenic properties. Boiling for twenty minutes is necessary to destroy these bacilli in sputa. It remains virulent in sputa, undergoing decomposition, for forty-three days. The gastric juice does not affect it.

Then, too, tubercle bacilli are more insusceptible than almost any other form to chemical agents. True, Schill, Fischer, Cavagnis and Baumgarten all found carbolic acid fatal to them. Corrosive sublimate kills it quickly in the strength of 1 : 1000. Sputum is also rendered innocuous by absolute alcohol, saturated solutions of salicylic acid, acetic acid, liquor ammoniæ (caustic), the vapor of aniline

oil, etc.; but, as Baumgarten observes, these facts have theoretic interest only. Tubercle bacilli in sputa—probably the chief source of conveyance—are protected as thoroughly as if imbedded in masses of glue. Carbolic acid, to be effective, must be used in at least a five per cent. solution; the sputa must be agitated with it, and the preparation must stand twenty-four hours. In experiments with sublimate solution, the sputa must be atomized, for in substance there is formed at once upon the surface a coagulum, which effectually prevents deeper penetration. I have myself, after experimentation of over a year, entirely abandoned hope of any relief from corrosive sublimate, whether by inhalation or by parenchymatous injection, and have long since come to the conclusion of Fræntzel, that no kind of inhalation can ever directly address the cause of this disease. The remedy must come, if it may ever come, through the blood, to reach the cause from behind, possibly in the act of its escape from the lungs.

The singular resistance of these bacilli to coloring matter, and the tenacity with which coloring matter, once obtained, is held—facts which give these bacilli a position quite distinct—have been attributed to a comparatively impenetrable envelope which may likewise protect the protoplasm of this parasite from chemical destructives.

The agents most lauded as specifics in the past year have been iodoform—abandoned as a specific since Trudeau succeeded in cultivating tubercle bacilli in solutions of it—sulphureted hydrogen by inhalation or rectal injection, which may relieve the associate catarrh, but has no antimycotic action whatever; inhalation as well as internal administrations of menthol, thymol, carbolized iodine, also used in parenchymatous injection, and creosote. Of these the only agent which has stood any test at all is creosote, which was first introduced by Bouchard in 1877, and was lately extensively employed by Sommebrodt and

Frærtzel. Diminution of cough and expectoration, reduction of fever, increase of appetite and weight, and clearing up of consolidations, are the virtues claimed for creosote by these observers. It is best given in capsules with the balsam of tolu or with tincture of gentian and sherry wine. The best results are obtained only by individuals who will patiently persist in the use of the remedy for six to eighteen months.

In my own experiments with creosote, which extend over nearly a year, the dose was increased one drop a day to fifteen drops at a time, and in one case the increase was continued to forty drop doses three times a day. Several patients also inhaled atomized pure creosote in the pneumatic cabinet. In all cases the preparation used was the pure beech-tar creosote imported directly from Merck's laboratory at Darmstadt. That good results are obtained in the long use of this remedy I am firmly convinced, but that these results are due to any direct antimycotic action of the drug I doubt, from the fact that relapses of fever, with cough, occasional night-sweats, etc., recurred at longer intervals perhaps, but nevertheless continuously.

In the attempt to eliminate the active principle from creosote, I next made a series of observations with guaiacol, which I also imported from Merck's establishment, and reported or mentioned the use of it at the Cincinnati Academy of Medicine about a year ago, six months at least before reports began to come in from German observers. A short trial of this remedy convinced me that guaiacol had no superiority over creosote.

As I had been convinced of the value of Bergeon's method in certain cases—by no means in all or even in the majority of cases treated, if only in the direction of addressing the soil or perhaps the products of the action of the bacillus tuberculosis—and as sulphur has had praise in the treatment of phthisis from time immemorial—the

ancients called it, indeed, the balsamum pulmonum—I determined to follow up the sulphur compounds in different directions, with preference for those which escaped through the lungs, and commenced with the combinations with allyl, a substance which is known to have surprising value as an antimycotic. Accordingly I commenced with one drop doses of the sulphide of allyl, which is the essential oil of garlic. The drop was given in a teaspoonful of whisky and in half a glass of water after each meal, and the dose was increased one drop a day. This combination makes, virtually, an allyl alcohol, a well-known agent in the chemist's laboratory. The drug was given only to the most advanced and apparently hopeless cases, all, with one exception, affected with night-sweats, diarrhœa and laryngeal complications. Quicker results were obtained with this remedy than with any other used hitherto—cough diminished, expectoration grew less, night-sweats ceased, and in one case there was an actual gain in weight of ten pounds in the course of four weeks. The dose had been increased in this case to fifteen drops three times a day, with increase also—though not in corresponding degree—in the vehicles employed. In my experiments I used up every drop of the essential oil of garlic that could be obtained for me in this country by both Messrs. Fennel & Martin and Heister, druggists.

But there is another potent reason why this agent had to be abandoned, and which will always forbid its general use. The odor of the breath and of the whole body becomes under the use of it so intensely offensive as to put the patient absolutely under ban. One of my colleagues actually refused to enter the ward of the hospital where but one inmate took the drug, and one patient who was still able to work a little was compelled to leave his shop, under threat of resignation of all the other workmen. When a patient under full dosage entered my house, I was compelled to air the room for fifteen minutes

to make it endurable for myself or other patients. I, too, could exclaim with Horace, "*O, dura messorum ilia!*" in detestation of this smell, and realize the depth of degradation of the duke, who, in his satyriasis, Lucio says, in *Measure for Measure*, "would mouth with a beggar though she smelt brown bread and garlick."

From the sulphide to the sulpho-cyanate of allyl would seem but a step, and accordingly I began next with this preparation, which is the oil of black mustard. The only bacteriological observations made with this agent, so far as I can discover, are the celebrated experiments of Koch upon anthrax bacilli with different antimycotic agents. In this list the oil of black mustard ranks next in value to corrosive sublimate. The oil of mustard entirely prevents the development of these bacteria in the proportion of 1 to 33,000, and hinders their development in the proportion of 1 to 330,000. It hinders development in the same proportion as corrosive sublimate actually prevents it. The question first arose whether it would be safe to administer the oil at all; next, in what dose could it be given with safety; and last, would it prove of any specific value in tuberculosis?

But two observers, so far as I know, have made experiments upon animals with this powerful and most intensely irritating agent, the active agent evolved by water—as it does not preëxist in the seed—in the common mustard plaster. Both these observers, Mitscherlich and Henze, made their studies before the days of modern bacteriology. Mitscherlich reports it as the most dangerous of all the ethereal oils. Henze agrees with him in this regard, remarking that the initial dose must be very small, else it may be attended with instant death. It reduces the temperature, retards the pulse after first increasing it, and has the same effect upon the respiration. These experiments are summarized in brief in Schmidt's 'Jahrbücher,' 1878, Vol. 180, p. 124. I commenced my experiments only in

hopelessly advanced cases, with the fraction of a drop as obtained by dilution in alcohol and water. The drug is intensely irritating even when diluted in half a glass of water, so that the maximum dose which I have been able to administer, as yet, is but three drops. One and a half drops, which I have given three times a day, excites, in copious dilution, over the whole chest and abdomen a feeling of warmth which ceases to be disagreeable in a few minutes. Beyond the first feelings of heat and irritation in the throat, nose and eyes, experienced, as a rule, only with the first doses, there is no discomfort, and with the dose administered there is no symptom whatever of danger on the part of the organs of circulation and respiration. No odor issues from the surface, and there is but slight odor—that of horse-radish rather than garlic—in the breath. As my observations with this remedy extend over a period of but one month, and include but six cases thus far, I am not prepared to speak definitely, as yet, of results. The general condition of all the patients continues to improve in so far that they feel better, as they say, without exception. None of them have lost weight in this time; cough and expectoration are materially reduced in every case; but one night-sweat has occurred in one case, and in all but one case there has been no marked elevation of temperature. In this exceptional and most advanced case of all, the temperature ran up one evening to 105 degrees, to subside on the next morning and remain since at 99 degrees F. I have made as yet no comparative estimate of the number of bacilli in the sputa, but reduction may be inferred, I think, from the marked diminution in the expectoration itself.

I present this paper thus prematurely as a kind of preliminary communication, in the hope that clinicians may try the remedy in all kinds of cases, and bacteriologists may make inoculation experiments under the possibly protective action of the drug.

Virchow closes his lecture on tuberculosis with the declaration: "Es ist die Aufgabe der Menscheit die Tuberculose zu überwinden" (Humanity demands the cure of tuberculosis), and every attempt in this direction, though it prove subsequently futile, must be gratefully received.

The results which I have seen in these hopeless cases encourage the hope that more decided action may be exerted in cases earlier in the history of the disease, for, as Cicero says, "*Omne malum nascens facile opprimitur, inveteratum fit plerumque robustius,*" which is but a Latin paraphrase of the observation of Aretæus, the Cappadocian: "In chronic diseases the postponement of medical treatment is bad, for by procrastination they pass into incurable affections, being of such a nature that they do not readily go off if they once attack; and if protracted by time, they become strong, and end only in death."

ON AN EXPERIMENTAL DEMONSTRATION OF THE VALUE OF GASEOUS ENEMETA IN THE DIAGNOSIS OF PERFORATIONS OF THE INTESTINES, AND THEIR REPAIR BY THE RUBBER RING AND DECALCIFIED BONE PLATE METHOD.

BY R. HARVEY REED, M. D., MANSFIELD, OHIO.

We do not claim any originality for the experiments we shall endeavor to show you this afternoon.

To Professor N. Senn of Milwaukee belongs the honor for all the originality pertaining to these experiments; but as we cannot have a Senn in every state to attend our meetings, the next best thing we can do is to repeat his interesting and important experiments, and by these means endeavor to impress on every member present here to-day their scientific importance and practical utility.

The first experiment will consist in etherizing a dog, and by rectal injections of hydrogen gas, show you that this gas can be passed the entire length of the alimentary canal, and be burned at the end of a stomach tube inserted into the dog's stomach.

The second experiment will consist in etherizing another dog, opening the abdominal walls, and making a perforated wound of the intestines, which we will again replace in the abdominal cavity, and by rectal injections of hydrogen gas we will be enabled to show you that the

gas will escape at the perforation of the intestine into the peritoneal cavity, and from there through a glass tube inserted into the abdominal wound, from which it may be readily burned.

We will then take the same dog and make a resection of the intestine, and unite the upper and lower ends of the same by the rubber ring method.

The third experiment will consist in etherizing another dog, after which we will shoot him through the abdomen, and then by applying the hydrogen gas test, demonstrate to you positively whether the bullet perforated the intestine or not; we will then repair the wounded intestine by Professor Senn's decalcified bone plate method.

By repeated experiments Professor Senn has demonstrated that pure hydrogen gas is absolutely harmless when injected into the intestinal canal, and he has also demonstrated by repeated experiments that it is innoxious when brought in contact with the peritoneal cavity.

By experiments on the cadaver he has demonstrated that it requires from eight to ten pounds pressure to the square inch to rupture the bowel at its weakest point, while it only requires from one-quarter pound to one and a half pounds pressure to the square inch to force the gas the entire length of the intestinal canal.

By taking an ordinary gas bag filled with hydrogen gas, you will find by the use of the manometer that two hundred pounds placed on the gas bag will register about three pounds on the manometer, which enables us to calculate very accurately the amount of pressure we are making on the intestinal walls by a given amount of weight on the gas bag.

Then by knowing the amount of pressure it requires to rupture the intestine, and the pressure it requires to inflate the entire canal, we have our bearings so firmly established as to easily avoid all points of danger from over pressure.

Now, gentlemen, here is what my friend, Dr. Baldwin, calls a "cur of low degree," which has been etherized.

I will now ask Dr. Craig to insert the stomach tube while I insert this rectal tube attached to the rubber hose of the gas bag, on which my assistant, Dr. Barker, is sitting.

The doctor will now turn on the gas, which you will notice has already commenced to distend the abdomen, and were you all close enough you would soon hear the gas pass the ileo-cæcal valve, which makes a hissing sound as it passes through.

It will take a moment for the gas to inflate the small intestines and stomach, when it will escape from the stomach tube.

If Dr. Larimore will now touch a match to the end of the stomach tube, I think you will find the gas escaping already. [A match was touched to the end of the tube and lit the gas, which burned several inches high.]

There, gentlemen, is positive proof that the gas has passed the entire length of the alimentary canal, notwithstanding the theories we have been taught concerning the ileo-cæcal valve.

The next step in our experiments will be to take the second dog, which I will ask Dr. Larimore and Dr. Hedges to etherize for me, after which we will open the abdominal cavity, and make a perforated wound of the intestine, and demonstrate to you that the hydrogen gas will escape from the abdominal wound.

[At this point Dr. Brundage of Xenia suggested that, owing to the lateness of the hour, the rest of the experiments, excepting the rubber ring operation, be dispensed with, as the audience would take it for granted that the gas would escape from the wound of the intestine without taking the time to actually demonstrate it. Dr. Reed said he was ready and willing to do whatever the audience preferred in the matter. After some general talk, it was

decided that the rubber ring experiment should be demonstrated on the dog, and that that should close the experiments.]

While the dog is being etherized we will utilize our time by describing the ring, which consists of the simplest form of ordinary black rubber.

The one I have here is made from a common rubber nipple, which has been cut in segments about half an inch in length. These segments were cut lengthwise and reduced in calibre to suit the intestine for which they are intended.

The rings are reunited by continuous catgut sutures. [Shows different sized rings ready prepared.]

You will readily observe by having the rings prepared in this manner that the catgut sutures, which hold the ring together and really make it a ring, will soon become absorbed, converting the ring into a straight piece of rubber, which will be readily passed per rectum without the least danger of obstruction.

We will now proceed with the operation by opening the abdominal cavity along the median line, and, after resecting some six or eight inches of the ilium, reunite the divided ends.

I will now tie the mesenteric arteries close to the border of the section of the ilium to be removed.

This being done, I will separate the mesentery from that portion of the ilium, being careful to keep my incision between the ligatures and the border of the intestine, and thus avoid any hemorrhage.

Before we proceed any further, we must satisfy ourselves positively which is the upper end and which is the lower end of the intestine, for in this operation it is absolutely necessary to know this, and observe that the proper relation of the bowels be carefully maintained in uniting them. This is not necessary, however, in the

decalcified bone plate method, which is a strong argument in its favor.

By examination, I find that this is the upper portion of the bowel, around which I will throw this broad rubber band, which is simply a piece of rubber such as you would use for your pocket diary, which I have cut open, and also cut a slit near the one end, which readily enables me to pass it around the bowel, and by pushing the end through this slit and drawing it tight, prevents all extravasation without injury to the intestine, and when the operation is over, it is easily and quickly removed.

This narrow rubber band I will place around the lower end of the bowel in the same manner as the first, which will not only prevent extravasation, but serve as a mark to designate between the upper and lower portions of the intestinal tract, the upper one having the broad rubber band around it, and the lower one having the narrow band around it.

We are now ready to remove the segment of intestine between these rubber bands, which I will now do with the scissors.

The next step in the operation is to insert this rubber ring into the upper end of the intestine, so that the lower edge of the ring and the cut end of the bowel are just even, and fix it there by a continuous catgut suture "whipped" over and over, as it were, the two ends.

Having done this, I will next carry a needle, armed with a catgut, through the wall of the intestine and upper end of the ring, and out through the lower opening of the ring and bowel, and back again and out through the upper end of the ring and intestine, about a line from where I entered, and by tying the ends of the catgut together, I fix the upper end of the ring in the bowels.

Having thus fixed the rubber ring in the upper end of the intestine, we are now ready to invaginate the lower end of the bowel, which I will now do with my forceps,

and turn the serous surface in about half or three-quarters of an inch.

My assistant will now hold the lower end of the bowel so as to prevent the return of the invaginated portion, while I take my forceps and carefully grasp the upper portion of the bowel and rubber ring, and insert them into the invaginated portion of the lower end of the intestine.

You will observe that the contraction of the cut end of the bowel makes this procedure somewhat difficult, owing to the dilatation of the upper end by the rubber ring and the reduction of the calibre of the lower end by the invagination.

Having inserted the upper end into the lower, the next step is to fix it there by two sutures passed through both the upper and lower portions of the intestine and also the rubber ring.

These sutures should be passed one on each side of the intestine, as it were, and not on the mesenteric border or dorsem of the bowel, so to speak, and should be of catgut, and simply carried through both the upper and lower portion of the bowel and include the rubber ring, and then carried out again through the same, say half an inch from where you entered, and the two ends of the suture tied together.

Owing to want of time, I will not wait to introduce both of these sutures, as my object is to demonstrate the general principles of the operation rather than the technique; hence I shall only take the time to insert the one suture.

Having united the two ends of the intestine, the last step is to cut off a small piece of the omentum, which we will select from the least vascular portion of the omental apron, and throw it around the intestinal splice like a ferule, and fix it there by two or three catgut sutures along the mesenteric border of the intestine.

Then remove the rubber bands from around the upper

and lower portion of the bowel, and after cleansing the peritoneal cavity, close the abdominal wound and the operation is complete.

I will now ask you to take the trouble to come down and examine what we have done for yourselves, and if any part of the operation has not been made plain, I will try to make it so. [The members then came down and examined the results of the operation.]

By this method you will observe that a resection of the intestine can be made, performing an enterorrhaphy, as I have done to-day, or an ileo-colostomy, or a lateral implantation operation, with little danger of extravasation, the operation being much easier and more rapidly performed than any of the old methods of uniting the bowel by the Czerny-Lembert suture, and with much less danger of fecal extravasation.

By this method you are enabled to bring two broad surfaces of the peritoneum together and fix them there, while the rubber ring, by its elasticity, keeps the intestinal walls from collapsing, and keeps the upper and lower portions of the intestine held firmly together, preventing extravasation and facilitating rapid union, which is usually completed in from 36 to 48 hours.

The ferule of omentum not only acts to doubly strengthen the splice made in the intestine, but it soon becomes firmly adhered to the intestine and prevents extravasation, should a defect occur at any point in the splice.

The catgut sutures soon become absorbed, which is not until the two ends of the intestine are firmly united, when there is no further use for the rubber ring, which is passed per rectum as a straight piece of rubber.

I regret that want of time will prevent my showing you the decalcified bone plate operation, for I think time will demonstrate it to be the better of the two operations when put to the crucial test for the repair of the intestines.

As already mentioned, in this operation it makes no difference in performing an ileo-colostomy whether the operator knows which is the upper or lower end of the bowel.

All that is required is to ligate the mesenteric arteries, remove the desired portion of the intestine, invaginate both the upper and the lower ends of the bowel and close them while invaginated with a continuous catgut suture; then make a slit, say an inch long, in each intestine about an inch from the end, on the opposite side of the bowel from its mesenteric border; then by inserting one of the decalcified bone plates into each slit [passes fac-similes of the decalcified bone plates around],* and fix it there by transfixing the sides of the slit with the two sutures armed with the needles, and bring the two sutures, not armed with the needles, out at the ends of these slits.

After you have fixed both ends of the intestine alike, you have nothing to do but carefully approximate slit to slit and tie the lower two sutures together, then each of the two end sutures together, and lastly, the upper two sutures together, and you will have an artificial channel established between the upper and lower ends of the intestine, which is firmly braced with these bone splints which hold the serous surfaces of the intestine firmly against each other until union is complete, when the bone splints are digested, and the ligatures are passed per rectum, while the continuity of the bowel is established with only a slight "jog in it," as our civil engineers would call it.

In the majority of instances I prefer the decalcified bone plate operation, because of its simplicity and efficiency.

By this operation you can make a resection, or by an implantation operation "side track" any desired amount

* For description of bone plates, see "Some New Operations in Abdominal Surgery," etc. Columbus Medical Journal, Vol. VI., No. 7, page 301.

of the intestinal tract, and allow it to undergo physiological atrophy; or, as in a case I saw a few days ago in the Milwaukee Hospital, in which there was a cancer of the pylorus, where Professor Senn had, by the bone plate method, divided the duodenum below the cancer and attached the lower portion of the bowel to the greater curve of the stomach, the operation proving successful, the speaker having seen the patient and talked with her during her convalescence.

Before closing these remarks, allow me to say that my friend, Dr. William Mackie of Milwaukee, has just written me that on the eve of his return home from the meeting of the American Medical Association at Cincinnati, he was called to a case of gun-shot wound, where he had occasion to use the hydrogen gas enemata for diagnostic purposes, and found it as reliable in the human as in the dog, this being the first case on record in which it was used for diagnostic purposes on the human subject.*

The practical importance of these discoveries made by Professor Senn is of such moment to the profession, not only from a scientific but a medico-legala aspect, that I trust the imperfect attempt I have made here this afternoon to reproduce them will at least be sufficient to interest you all enough to procure and read for yourselves his masterly production on "An Experimental Contribution to Intestinal Surgery, with Special Reference to the Treatment of Intestinal Obstruction," read before the Ninth International Medical Congress, and published in the Annals of Surgery; also his paper on "Rectal Insufflation of Hydrogen Gas an Infallible Test in the Diagnosis of Visceral Injury of the Gastro-Intestinal Canal in Penetrating Wounds of the Abdomen," read in the section of surgery at the Thirty-ninth Annual Meet-

* Since my return from the State Society, I received the report of Dr. Mackie's case in the Medical News, Vol. LII., No. 23, page 628.

ing of the American Medical Association,* and after reading and studying those wonderful contributions to intestinal surgery, you will, if not satisfied with their practical value, repeat his experiments for yourselves until you *are* satisfied, and then prepare yourselves with the necessary equipments to apply these simple and reliable methods for the saving of human life in your own practice.

* Since delivering the above lecture, Professor Senn's paper on "Rectal Insufflation of Hydrogen Gas," etc., has been published in The Journal of the American Medical Association, Vol. X., No. 25, page 767.

ELASTIC EXTENSION IN THE TREATMENT OF CHRONIC INFLAMMATION OF JOINTS.

BY S. L. McCURDY, M. D., DENNISON, OHIO.

Elastic extension is comparatively a new method of treatment of chronic inflammation of the joints, and the literature upon the subject is to be found entirely in the journals of to-day.

The originator and advocate of this method has done much to alleviate the most troublesome and almost uncontrollable condition.

In May, 1887, I read a paper on "Mechanical Therapeutics of Joint Diseases" before the Association of Surgeons to the Pennsylvania company, at Crestline, Ohio,* in which were enunciated the principles of elastic extension and articulation motion, with a history of five cases successfully treated up to that time. I will say that the plan is essentially that of Roberts of New York.

As I have had recently under treatment a typical case of chronic traumatic inflammation of the wrist joint, I shall confine my remarks to the wrist, with the mode of making and applying an apparatus.

J. A. W., aged 29, while handling tools and a steam-hammer, received a severe blow on the palm of the hand while it was at right angles to the forearm. The force coming on a line with the forearm was expended directly against the palmar surface of the carpal bones.

*Ft. Wayne Journal of Medical Science.

The hand presented the usual symptoms of severe contusion, with apparent symptoms of palmar abscess. In about two weeks after the reception of the injury, these symptoms were displaced with all symptoms that mark a case of inflammation of synovial membrane of wrist joint. Up to this time the usual amount of iodine, liniments, lotions, poulticing, strapping, splinting and bandaging had been used with energy, but without amelioration of symptoms, but instead they made a gradual onward march. The dorsal surface of the wrist presented a doughy, odematous appearance. The skin was quite red over the joint. There existed great tenderness of pressure, with very severe pain, day and night, through the wrist joint from the palm backwards. As is true in all cases of synovitis, that by grasping the affected hand in one hand and the elbow in the other and make gradual traction, that when the interarticular pressure is relieved the pain would for the time cease. On the contrary, if the pain does not cease, you will find a central ostitis instead of a synovitis. This will be found to be of great diagnostic value.

The elements that enter into the pathology of a joint in a state of inflammation are, reflex muscular spasm of all muscles that pass over the affected joint, which results in an increased pressure of bone against bone and aggravates the already inflamed membrane that intervenes. So long as this constant contraction of muscles is not relieved or overcome, at every movement of the joint the membranes are rubbed against each other and the inflammatory changes are encouraged as well as the pain being made almost unbearable, save with opiates. Upon circumferential measurement, even at the third week, the muscles of the forearm were found to have undergone considerable of atrophy. The interosseous muscles of the hand keep pace, in degree of atrophic disturbance, with the other muscles. The inflammatory products thrown out about the joint pro-

duce pressure upon the nerves that may be involved, resulting in a corresponding disturbance of sensation and of motion beyond the affected joint.

In our case the median nerve was involved, and a destruction, almost complete, of sensation and motion of its area of distribution.

An experience a few years ago in a similar, but, in the earlier history of the case, not so severe as the case under consideration, resulting, ultimately, in amputation through the forearm, led me to more vigorously and energetically meet what now appears to me to be the plain demands of the case. The case herewith presented is about the twelfth case treated by elastic extension since the above disastrous case, after receiving what we had "in the shop," passed within the walls of a neighborhood hospital, with a staff of eminent surgeons, antisepticized, exsected and finally amputated.

I now assert that the present case would certainly have passed through the same course but for elastic extension.

With the light I have in stock upon the subject, and the subject symptoms above described to deal with, steps were immediately taken to meet the demands of the case. The rational treatment is to overcome rigid muscular contractions, which, if effectually done, will relieve inter-articular pressure and, at the same time, give the joint that liberty that will allow free articular motion, but the latter restricted in such a way as to give strength and support to the affected joint. When a rigid board splint, or plaster of Paris, is adjusted, which completely restricts the movements of the joint, anchylosis is a very probable result. Indeed anchylosis would be very desirable, but Agnew says, regarding synovitis: "After many months or years the patient finally recovers with an anchylosed joint and a withered limb."

We have learned not to be satisfied with the results the text-books assure us are all we can hope for.

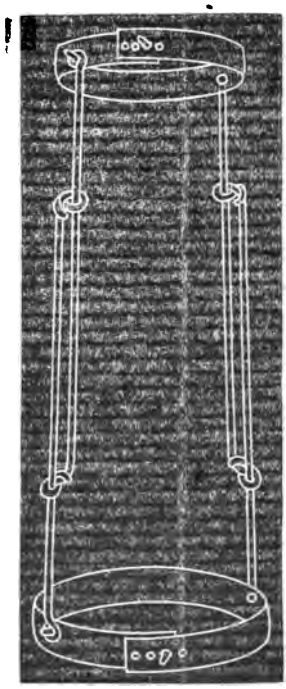
As time is limited, I shall confine my remarks to an apparatus containing a combination of mechanical principles as used in a case of wrist joint disease. You will first notice how crude and homely this apparatus is, which is intended for a purpose. The ordinary braces and appliances made by the surgical instrument dealer are so expensive as to be beyond the reach of many of our cases. Besides this, to take measurement for a brace and send to the maker for one takes some time, and before the brace is applied, our enemy has been making most disastrous advances. This brace originally improvised answers every purpose. It can be made in half an hour at an expense of not more than fifty cents, or if you are handy you can construct it yourself. I sincerely hope that no faith will be lost on account of its comeliness, for the same ideas can be enlarged upon to suit the complexion of your subject.

As you see, it is composed of two tin hoops one-half to one inch wide, and long enough to pass around the affected member; and the side bars are made of No. 8 or No. 10 ordinary iron wire. The hoop that passes around the hand at the knuckles is bent to the curvature of the parts, and through it, opposite the knuckle of index finger on the side, you will see a rivet, and another at a corresponding point in the same way. The bands are made open so as to be adjustable, the adjustment being made by means of a projecting rivet from one end and a number of holes in the others, through which the rivet passes.

The distal ends of the side bars are made with an eye the size of the rivets, which is secured to them. The object of the rivets and eyes being adjustable will readily be appreciated when the description of the mode of applying the apparatus is given.

The proximal ends of the side bars are made of one continuous piece of wire bent in such a manner as to

allow them to slide upon each other freely, and still have remaining a hook that projects upward. The hooks are for the attachments of the elastic extension. The entire apparatus consists of four side bars, the ends of which are bent in this way, but no two having the same angles, but all very similar. Without making an effort to minutely describe the manner in which the splint is made, will say that the proximal ends are made of six angles.



You will also observe, besides the side bars, the wrist is given support by a piece of tin curved to fit the back of the wrist and hooked at its ends to the side bars. This gives a decided support, but does not limit the articular motion to a great degree.

To apply the brace, first, attach to the tin bands rubber adhesive plaster, one inch wide and long enough to

wrap around the band about twice, and extend to the diseased joint but not across it. Apply five or six of the above widths to an adult hand. The band is secured in the same way to the arm. The plasters being moulded to the skin are secured by an ordinary roller bandage. The side bars are then adjusted, and, after sufficient time has elapsed to allow the plasters to thoroughly adhere, the elastics are thrown about the hooks and the proximal ends of the bars. I have generally used the ordinary ring rubber elastic, selecting one with enough power to overcome muscular spasm and relieve interarticular pressure.

I have for consideration at this time primary synovitis, with a description of an apparatus sent, able for a case of wrist joint disease.

Cases of joint disease that have their origin as a central ostitis, and, secondarily, synovitis, even when they advance to the stage of suppuration, are more readily controlled by elastic extension than by plaster of Paris, or by rigid support of any kind. With rigid support, the best that has been obtained in the majority of cases is anchylosis, complete or partial in cases of elbow, wrist, knee and ankle trouble, and deformity in hip disease, either with or without exsection. With elastic extension properly applied to any joint of the body, from the second joint of the finger to a vertebra, either suppurating or non-suppurating can be treated with a greater degree of satisfaction than by any other method.

While elastic extension must reign supreme in this paper as a mechanical remedy in joint diseases, local and constitutional medication must not be forgotten as adjutants.

A local application of the following will be found of great value: Tr. aconite, Tr. iodine, F. E. belladonna, glycerine applied by saturating a piece of sponge and place about a joint over the swollen portions and not over

any bony prominences. Envelop the sponges and the entire joint with a piece of oiled silk or muslin, or lint on moist paper, and secure pressure and hold the dressings in position with a roller.

The iodine of potassium is best given as follows: Add one ounce of the crystals to an ounce of water, a drop of which is practically one grain of the potash salt. Begin giving five drops three times daily after eating, in a wine glass of water, increase one drop every day. Up to toleration, given in this way, patients stand the drug much longer than any other way.

At this date, eight weeks after the apparatus was adjusted, the case has so far recovered as to think of returning to work. The swelling about the joint has disappeared. The very severe and constant pain which was present in the course of the trouble has entirely disappeared; a very slight soreness on pressure; no pain on articular motion even without the brace. Sensation is returning to the fingers, and the case in every way bids fair to progress to recovery, and which I am satisfied will do from past experience in similar cases.

The case has, after three months, made a perfect recovery.

INDIGESTION.

BY JAS. U. BARNHILL, A. M., M. D., OF COLUMBUS, OHIO.

Perfection of life in the animal organism depends upon digestion, absorption, assimilation and elimination, a series of processes so closely associated that disturbance of one results in the derangement of the others.

> "The least confusion but in one, not all,
> That system only, but the whole must fall."

Cell functions of assimilation, secretion, excretion and reproduction, accompanied by the wondrous phenomenon of the transformation of inorganic into vitalized organic matter, are dependent upon the general circulation. The blood is the supply stream of nutrient material for constructive metabolism and energy, and the efferent channel for the elimination of waste products.

Digestion, which is intimately connected with nutrition, is the process by which organic substances are rendered diffusible through the membranes of the body and soluble in its fluids. It differs from fermentation in the nature of its ferments and in the character of the processes which they effect. Digestion is essentially a process of hydration under the catalytic action of *unorganized solvents*, or enzymes, while fermentation is decomposition by the action of *organized ferments*.

DIGESTIVE PROCESSES.

In normal digestion, ptyaline, and amylopsin which acts much more energetically, convert starch and amyloids

into glucose, maltose and dextrine. The diastatic ferment of the bile transforms starch, in small quantity, into sugar, and the invertin of the *succus entericus* converts saccharose into invert sugar, which is a mixture of laevvlose and grape sugar, and continues the diastatic action begun by other ferments by converting maltose into dextrose (Bernard). These hydrolytic ferments require alkaline solutions to render them active, but saliva will act slightly in weak acid solutions. Pepsin and the trypsin of the pancreatic juice transform proteids into soluble albumens or peptones and parapeptones. Stearpin of the pancreatic juice, assisted slightly by the bile salts, splits up the fats into fatty acids and glycerine and emulsionizes those not thus decomposed. Seven or more hydrolytic emzymes are engaged in effecting the subgastric conversion of food into chyme, while throughout the alimentary canal digestion in one part is supplemented by that in another. Maltose of ptyaline digestion is converted into dextrose by invertin. The intestinal fluid, acting but slightly upon raw albumens (Kühne), further digests them after they have been submitted to the action of pancreatin, and acts upon propeptones, peptones and parapeptones—the products of gastric proteolysis. By prolonged action, gastric juice reduces peptones to leucin and tyrosin. The alkaline saliva, by its influence upon osmosis, excites the secretion of gastric solvents, and the hydrochloric acid of the gastric secretion facilitates intestinal absorption and stimulates the secretion of pancreatic juice and bile, while the bile facilitates absorption, stimulates the musculature of the intestine and prevents decomposition. It is seen, therefore, that digestion is not simply a series of separated processes, but a succession of component functions.

The secreting cells undergo important histological changes during rest and activity. During rest the mucous membrane is *pale* and *anæmic*, while during activity it is

richly supplied with blood. The cells themselves, when inactive, are "clear," with but few granules and shriveled nuclei; when active they become granular; some diminish in size, others (the chief peptic cells) enlarge, "the hyaline substance increases" and the "frame-work of living protoplasm grows" (Langley). As digestion proceeds, the soluble products are absorbed *pari passu*, the blood becomes *richer in nutritive material*, and, returning to the secreting glands, reinvigorates them, and they in turn elaborate and secrete an *increased quantity* of digestive fluids. Thus healthful digestion increases the digestive powers, while its derangement impoverishes the blood and further enfeebles digestive processes. Health begets health. It might be said that *dantur salus nulli nunc nisi sanis.*

Indigestion expresses a true condition and designates an affection which is accompanied by a great variety of symptoms and morbid phenomena. The frequency of its occurrence, the amount of suffering and incapacity for work which it entails, and the perversion of vital processes which it occasions, certainly entitle the subject to consideration. Departures from normal conditions are more frequent in connection with digestion than with any other function of the body, yet we are content with but a limited understanding of these disorders, and practice more empiricism in the treatment of them than in that of any other class of ailments. The following remark calls attention to the importance of the subject: "Very much more than half the patients we lose," says Thomas King Chambers, "die from imperfect nutrition, and very much more than half of those that recover gain that end by chanced or designed restoration of their *digestive functions.*"

EVIL SEQUENCES.

Slight attacks of indigestion may be of little consequence, yet we should remember that derangement of

digestion, however slight, *always impairs nutrition*, and that when associated with grave diseases, it invariably *hastens their progress* and may be the source of death. Deficiency of nutrition, local or general, indicates lowered vitality and (germs *post hoc vel propter hoc*) is the initiative step in the invasion of all morbid processes. The following, abridged from Landois and Chossat, are some of the phenomena of impaired nutrition or inanition: Dryness of the mouth, *cessation of digestive secretions, walls of alimentary canal anæmic and thin*, less albumen in the plasma, cardiac pulsations and respirations fewer, phosphoric and sulphuric acids in the urine, muscular weakness and depression, serous effusions, œdema, thickening of epithelium and destruction of mucous membranes, discoloration of viscera and skin, loss of weight, producing death when it reaches four-tenths of the normal, limited power of resistance of cold, softening of tissues, diarrhœa, hectic fever, convulsions or coma, and death. Chossat adds to the three modes of deaths by the brain, lungs and heart, a fourth—by inanition. A state of deranged digestion perpetuates itself by aggravating the causative conditions. It reacts upon the nervous system and depresses vital functions; the ingesta distend or press upon the stomach walls and render them anæmic and arrest their normal movements; the products of fermentation and putrefaction, which soon succeed arrested digestion, pervert secretions and induce nausea, vomiting, headache, gastritis, dilatation, ulceration, or other structural changes in the membranes of the stomach, and, by their absorption, vitiate the blood. In the indigestion of "bilious attacks," it is ptomaïnes rather than bile that causes the vomiting, and thus prevents physiological processes. We are familiar with the depressing influence that deranged digestion has upon the mind, producing melancholy and moroseness, upon the heart's action and *circulation*, thus interfering with *absorption, metabolism*

and *elimination*, and how it may disturb the respiration and functions of excretory organs. The Greeks seem to have seen "through a glass" albeit darkly, as they gave the name melancholia (black bile) to depression of spirits, associated with indigestion and hepatic disorders; but modern science, discerning more clearly, "joins hands with this ancient notion" in the explanation that in certain forms of indigestion, biliary salts often collect in the blood, and by their action on nerve centres produce mental depression. In a case of indigestion reported by Dr. Ewald, marsh gas, a product of putrefaction in the bowel, issued from the mouth and took fire as the man was lighting a cigar. Sulphureted hydrogen produced by fermentive changes in the stomach may produce weak pulse, giddiness and collapse. Excess of lactic, acetic or butyric acids arrests the action of the digestive ferments, while these and other acid products of fermentation give the blood and excretions an acrid character. The *languor* and *faintness* occurring in persons of feeble digestion about four hours after meals result from the poisonous action of fermentive or putrefactive products, *i. e.*, ptomaïnes; while the intense headache which many dyspeptics suffer, especially in the morning upon rising, is doubtless due to the same cause. Much of the cephalalgia accompanying gastric derangement seems, however, to result from disturbances in the cerebral circulation. Defective digestion causes crapulous and lienteric diarrhœas, and not infrequently induces or abets constipation. Peptones unmodified by trypsin or the liver, injected into the general circulation of a dog, depress the heart's action, arrest the renal excretion, and, in large quantity, produce a soporose condition, convulsions and death (Mühlheim). In health, the peptones, sugars and other products of digestion and ptomaïnes in small quantity undergo important transformations in the liver, by which they are rendered toxically inert, or otherwise suitable for appropriation

to tissue growth, and the gastric, pancreatic and intestinal juices that have escaped destruction within the alimentary canal, contribute to the formation of glycogen. But in deranged digestion, functions are so impaired, proteolysis and amylolysis so imperfect, and ptomaïnes so numerous, that, instead of being thus destroyed in the intestines or changed in the liver, they pass on in excess from the portal into the general circulation, exerting their poisonous influences upon the blood, nervous system and excretory organs.

Since some of these ferments are active in alkaline media, it is obvious they will have a deleterious influence upon the constituents of the blood.

In consequence, the liver is congested, albumens and sugars overtax the kidney and acrid products irritate the skin. These conditions become important factors in the ætiology of disease. Nitrogenized food, imperfectly assimilated, favors the development of gout, or by increasing the amount of excretory matter, as urea and lithates, induces Bright's disease. It is well known that various forms of skin disease, as acne, urticaria and eczema, are traceable to derangements of digestion and assimilation. In bra-dyspepsia an animal diet will produce the lithic acid diathesis, and hydrocarbons, especially sugar, will always hasten the progress of diabetes mellitus, and, in persons with an hereditary predisposition to the disease, may be the *origo mali.*

CAUSATION.

Dietetic errors, such as irregularity of meals, imperfect mastication, which, it has been tritely remarked, has become a lost art, the taking of unsuitable and improperly prepared food, gluttony and the drinking of too much tea, coffee or other fluid while eating, are some of the direct causes of impaired digestion. Besides checking the secretion of saliva and diluting the digestive solvents in the

stomach, as all fluids do when taken in large quantity with food, tea, by the action of its tonic acid, hardens the albumen and gelatine of meats and renders them quite indigestible. Fasting *debilitates the secreting glands* by disuse, *exhausts the system* and leads to excesses after prolonged abstemiousness. Tobacco and alcohol are fruitful sources of indigestion, the former by nervous disturbances and waste of saliva, the latter by the precipitation of the hydrolytic ferments and the production of gastric catarrh. Imperfect formation of solvents, physical inactivity or violent exertion; mental influences, as study, anxiety and emotions; neurasthænia, nervous irritability, torpidity, paralysis or hyperkinesis of the musculature of the digestive tract; organic diseases of parts intimately connected with digestive processes; general debility and febrile diseases, are potential factors in deranging digestion. An enfeebled circulation, directly or indirectly, is the chief source of functional indigestion. It permits waste products to collect in the tissues and interfere with nutritive changes; it absorbs but imperfectly the already digested proteids, as osmosis and diffusion are proportioned to the activity of the blood current, while those remaining concentrate the fluid, limit molecular mobility and interfere with the action of the hydrolytic ferments. Through impoverishment of the blood the secreting glands are deprived of the necessary material for the elaboration of the needed digestive solvents, as albumens for pepsin, zymogen for trypsin or sodium chloride for hydrochloric acid. A rapid and copious blood supply favors all secretions and vital processes. The acids of fermentation and products of putrefactive changes impede or arrest digestion. While these products check digestion hydration, it should be remembered that fermentation processes in the stomach or small bowel are only rendered possible, at least to the extent of being deleterious, by an absence of the normal quantity (relative to the amount of ingesta)

of the digestive solvents. Hydrochloric acid (0.2 per cent.) or pepsin (0.3 per cent.) in solution in the proportions in which they are found in normal digestion, singly or in combination, will *prevent the action of organized ferments.*

TREATMENT.

In ordinary cases the object of treatment should be, as Dr. Pavy remarks, "to raise the digestive capacity to the level of digesting requisite food rather than to reduce the regimen to an adjustment with a low standard of digestive power;" it is obvious that when the affection is due to structural changes, the success of any treatment will depend upon their recognition and proper management. Dietetic errors should be avoided, psychical causes removed, moral and hygienic regulations imposed. But notwithstanding moral treatment and dissertations upon dietetic improprieties, however well directed, the calls of duty, pleasure, ambition and appetite will overtax some part of the organism, and the complex functions of digestion will suffer frequent derangements. Treatment should be based upon pathological conditions and departures from the type of physiological action, and directed upon the suggestions of healthful functions.

In rare cases choice of food stuffs, special regulations or predigested aliment may, for a time, be advisable; as in the feeble digestion of phthisis, debility and convalescence. But in purely functional indigestion, ordinary food under the guidance of appetite, irrespective of preconceived notions that certain articles would not be agreeable, should be taken in moderate quantity and with scrupulous regularity. After having digested its contents, the stomach should have short periods of rest before food is again introduced. Long intervals of rest, however, divert the circulation and enfeeble the secreting cells. If tardy digestion be due to constipation or torpidity of the liver, these causes should be removed; if to diminished peris-

talsis in the alimentary tract, appropriate treatment should be adopted for its restoration; if to nervous conditions, they should be the objects of attention, or if it be occasioned by general debility, appropriate restoratives must be administered. If we conclude that, as the digestive secretions are inadequate, digestion may be restored by addressing stimulant treatment to the secreting cells, we shall be disappointed. It is not so much stimulation as it is nutrition that these cells need. In the majority of cases that apply for treatment there is a condition of incapacity and suffering from which they seek relief, or there is, at intervals, a recurrence of a similar condition which they hope to avert.

The dual character of digestion, vital and chemical, must at all times be recognized. Functions of the organism cannot long be operative without the chemical processes of digestion, and the chemical processes are wholly dependent upon these functions. In arrested digestion both factors are practically inoperative, one for the want of *nutriment in the blood*, the other for want of digestive solvents. The fact that we can supply the deficient element to the one, and cannot do so directly to the other, indicates what must be regarded as *rational treatment.*

Much confusion and ill-directed treatment arise from doubt as to which element of the digestive fluid in a given case is deficient. Fermentation of the ingesta is ordinarily evidence of the deficiency of *both* hydrochloric acid and pepsin; either, in the proportion in which they are found in the gastric juice during healthful digestion, will, as has been already stated, prevent fermentive changes. These changes may be recognized by the eructations, or by means of the syphon, and may be regarded, when coming on several hours after eating, as evidence of deficiency of both these ingredients. In very rare cases only, there may be hyperacidity from

hydrochloric acid, never giving rise, however, *per se*, to *tardy digestion* or *eructations;* but it may cause gastralgia in hyperæsthesia of the stomach, or of irritability of the mucous membrane from long exposure to its action. In a series of cases examined by Dr. Van Norden, he reports that in those in which hydrochloric acid was in excess, digestion of albuminoids was rapid and complete, and that there was *no heartburn* nor other *discomfiture.* In cancer of the stomach hydrochloric acid is said to be greatly diminished or absent. Deficiency of hydrochloric acid or of pepsin may be determined by removing a portion of the ingesta and applying tests, or by administering a few tentative doses of one or the other ingredient. It may be borne in mind that the *proportions* in which these elements may be combined, in order to insure digestion, *are not invariable*, and that the *rapidity* of the *digestive processes* is proportioned, within certain limits, to the *quantity of the digestive solvents.* A considerable increase of either, or both, will, as I have demonstrated by experiment, hasten the digestive process.

When putrefactive changes, as evidenced by the eructations, have been considerable, doubtless the best course is to empty the stomach by the syphon or an emetic. But in tardy or arrested digestion, accompanied by but slight fermentive changes, as an *expedient* to remove this state of incapacity and suffering, which often lasts for one, two or three days, with poisoning and starving and pain and positive injury to the digestive organs, I am persuaded that there is a better way than to use the emetic or syphon; and better too than attempting to "fast it off," for such material has been known to remain two weeks in the stomach. This prolonged state of indigestion has already impoverished the blood, checked nutrition and *held digestive processes in abeyance*, as the blood can not furnish material from which the secreting glands may elaborate digestive solvents. At the beginning of the

process of digestion, as experimentation has shown, the gastric juice is *secreted but slowly;* but as the digested material *is absorbed,* the secreting cells pour forth an *abundance* of digestive fluid. And Heidenhain demonstrated that the local secretion, excited by the mechanical stimulus of the ingesta, is slight compared to the general secretion depending on absorption of digested material. Would it not be better, instead of summarily removing this promised nutriment and further impoverishing the blood by delay, to *assist nature* at the point where she is weakest, to perform this task with which she is discouraged, than to remind her so forcibly of her incompetency? Emetics are revolting and injurious. They empty the stomach, but not by aiding physiological action. They derange rather than assist function. Aside from its moral effect, the use of the stomach tube is not free from objections. Two deaths are reported as having occurred from its use. Yet some of our text-books recommend its employment with the assurance that patients will learn to use it themselves. For purely functional indigestion this practice is to be condemned, and purgatives should be avoided. From the difference in action of certain drugs, as creosote, thymol or salicylic acid, on formed and unformed ferments, we may, by their use, check fermentation without interfering with digestion. In tardy gastric secretion, if these fermentive processes be prevented for a time, digestion is rendered possible without further assistance. If fermentation has begun, it should be thus arrested and its acid products neutralized by an alkali, as magnesic carbonate or sulphite of soda. If the cells are then unable to furnish the necessary digestive fluids, shall they be told to starve a little longer that they may gain more strength? or shall we not rather treat their arrested function as we would failing respiration—sustain it, if may be, by arousing residual energy; if not, then sustain it artificially, in the one case until the blood is supplied with

oxygen and the respiratory centre stimulated, in the other until the *blood is enriched* with nutritive material from which the eccritic cells may secrete the *needed digestive solvents?* Residual energy may be aroused by massage, friction and warmth over the epigastrium. They improve the circulation and increase muscular activity. Instinct teaches the lower animals to coil the body upon the abdominal viscera that they may be kept warm and richly supplied with blood during the digestive process. Nature places the infant, while nursing the mother's breast, in the best possible position to secure warmth to the stomach and speedy digestion and absorption. These results may, in a measure, be secured by occasional counter irritation with strong mustard plasters over the stomach. Commonplace as this may be, it aids function and is often a most effectual remedy. A capsine or weak mustard plaster worn over the epigastrium for a week or more will secure a more abundant and active blood supply and the digestive apparatus will grow stronger.

If these means fail to restore the physio-chemical processes, let digestive elements of the best quality, proportioned to supply the deficiencies, be administered, and thus secure rapid and complete digestion of the food within the alimentary tract. You will have given the patient the sense of comfort that accompanies rapid digestion, instead of the distress and ill effects of prolonged indigestion, or the prostration of the emetic; you will have enriched blood, returning secretions and the vigor of restored nutrition, in lieu of impoverished blood, deranged functions and lowered vitality. If there be acidity, let it be neutralized, and ten or fifteen grains of pure pepsin, or from five to twelve minims of the normal acid of digestion, one or both, as may be required, which will prevent further fermentation, be administered, and ordinarily the headache and gastralgia will disappear, a sense of comfort in the epigastrium will ensue, and

the dyspeptic will be ready for his next meal, with his digestive organs and whole system reinforced, through an enriched blood by the nutritive material of his previous repast. It *is improbable* that there are any more toxic products absorbed under this treatment than there would be from the residue remaining after an emetic, while practically there are *no evidences of deleterious* results from this source. To recommend the subject to fast off his indigestion, or to follow a dallying treatment with comparatively inert saccharated pepsins, or to attempt to purge away the ingesta that is yet in the stomach, either of these courses is irrational and pernicious. Neither the emetic, nor the syphon, nor the fasting, nor the purge, aid in themselves to restore function. They are *reversive and privative processes*, with only this argument in their favor, that they empty the stomach and give it rest. But they do this at a great sacrifice of vital energy; besides, it is not rest the stomach or secreting glands need; it is nutrition and nutritive blood supply. It is as if we should withdraw the air from the lungs in respiratory dyspnœa with the view of giving them rest and restoring respiration. The administration of digestive solvents does not, as some assume, interfere with, nor relieve, the function of the secreting cells. During the whole process of normal digestion, the eccritic *glands continue to pour forth their secretions*, even after the saturation of the ingesta, compensating for their escape with the chyme, and the neutralization of the acid by the saliva, their maximum amount often reaching *considerably beyond* the proportions necessary to secure ordinarily active digestion, excess of the solvents only *rendering the hydrolysis* more rapid and complete. The activity of the secretions does not depend upon the amount of pepsin and hydrochloric acid in the stomach (at least until they reach proportions considerably in excess of the normal), but, as already remarked, upon the presence of food in the stomach, the integrity

of the secreting cells, and an abundant and nutritious blood supply. Hence administration of hydrolytic solvents in arrested digestion, instead of *relieving secreting glands*, enables them to *resume their functions*, and they do resume them. Long continued use of these agents will be unnecessary, as they aid in restoring the autonomy of normal digestion. This temporary restoration of function, which has been accomplished along the line of physiological processes, should be supplemented by general tonics and special treatment, as the conditions of the case may require.

Intestinal digestion is very complicated, being effected by many complex agencies, modified by the functions of various organs and obscured by anatomical relations. But its derangement, independent of gastric disturbances or organic diseases, is comparatively rare. When it is due to diminution of pancreatic secretion, temporary benefit, awaiting the restoration of the action of the pancreas by appropriate treatment, may be derived from the employment of its chief ingredients, trypsin, amylopsin and sodic carbonate, administered near the completion of gastric digestion. When it results from impaired peristalsis or exalted muscular activity of the bowel, diminished intestinal or hepatic secretions, or sluggish portal circulation, the therapeutic corollary would be to direct treatment to the removal of these conditions. With healthy gastric digestion, the pancreatic juice, rich in its digestive solvents, will rarely be found inadequate to its important work.

SENILE HYPERTROPHY OF THE PROSTATE AND ITS RESULTS.

BY A. R. SMART, M. D., TOLEDO, O.

The paper which I have the honor to present to-day will discuss only the changes occurring in the prostate known as senile and the diseases of the urinary tract arising therefrom. I shall present nothing new, and perhaps nothing but what is already familiar. A somewhat extended observation has led to the belief that these conditions and their proper management are not so thoroughly understood as their importance demands. For this reason I present some thoughts on this subject at the risk of reiterating ideas that are "chestnuty." The term gland, as applied to the prostate, is misleading. It is a composite body, consisting of unstriated muscle, fibrous, elastic and connective tissue, having enclosed in its structure glands of the acinous type. In structure it thus resembles the tonsil; the muscular elements predominate. Its fibres are circular or orbicular in direction and are continuous behind with the circular fibres of the bladder. In size the prostate is nearly one and a half inches from base to apex, one and a half to two inches at broadest part in width, and about three-fourths of an inch in thickness. It consists of a central and lateral lobes, with the apex terminating at the membranous urethra, from which it is separated by the triangular ligament—posteriorly it rests upon the rectum. It envelopes the urethra, which passes through the upper portion for about an inch; the portion

anterior to the urethra is termed the anterior commissure, and the corresponding portion behind, the posterior commissure. The thick, central portion lying behind the veru montanum is penetrated by the ejaculatory ducts and is the seat of the most of the glandular structure. This portion included between the orifices of the ejaculatory ducts and back of veru montanum is known as the central lobe, and is particularly prone to enlarge in old age. The prostatic urethra is wider than at other portions and is triangular in form; the vesical boundary of this portion of the urethra is marked by a slightly rounded eminence on the floor of the vesical neck—the beginning of the veru montanum; on each side of this ridge is found a furrow or depression, the sinus prostaticus. In these furrows are the mouths of the ducts furnishing the secretion of the gland. The calibre of the prostatic urethra is narrowed at either extremity; the distal extremity of the prostatic urethra, or rather of the ridge on the floor, is composed of erectile tissue and is capable of forming a distinct eminence, continuous with the veru montanum; on the top of this eminence is the opening of a small sac—the utricle or sinus pocularis—supposed to be an analogue of the uterus; close to the edge and sometimes within it, are the openings of the ejaculatory ducts. The muscular tissues are longitudinal and circular, and thickest in posterior portion; the prostate is richly supplied with blood vessels and nerves, the arterial supply coming from Int. Pudic. *Vesical* Inf., and the Hemorrhoidal; the veins form a dense plexus around the gland lying underneath its fibrous capsule. The nerve relations are extensive and explain the numerous sympathies of this region. The perinæum, penis, femoral region and buttocks—parts supplied by the pudic and lesser sciatic nerves, which are given off by the same spinal nerves that send branches to the hypogastric plexus. The pain in the end of the penis, so often noticed in irritation about the neck of

the bladder, is explained by the nerve supply, the prostatic nerve plexus supplying the prostate, and neck of the bladder being continued to the end of the penis as the cavernous plexus. The normal weight of the prostate is approximately three-fourths ʒ. In senile enlargement, this is doubled and sometimes trebled. It will be seen that the prostate is not a true gland; the gland structure occupies less than one-third of the bulk of the gland and is found only in the posterior portion. It is continuous with surrounding structures and not isolated as glands usually are. The term prostate body would convey a more accurate idea of its character. The function of the prostate, like its structure, is complex. It plays an important part in the sexual function; remains quiescent until puberty, reaching its full development about the twenty-fifth year. The secretion of its glandular structure is intermittent, being especially active during sexual excitement. It is a clear or milky fluid, especially rich in chlor. sodium. It contains an organic base, which, in the form of a phosphate, is known as Böttscher's spermatic crystals, and give to the seminal fluid its peculiar odor. The milky hue is the result of lecithin, in emulsion with an albuminoid fluid; it has until recently been supposed to serve merely as a diluent of the spermatic fluid and lubricator of the urethra. Recent observations show that it acts a more important role as a vivifier and preservative of the spermatozoa. Beside the sexual function, the prostate acts as a muscular structure; it aids in expelling the seminal fluid and the urine. After sufficient accumulation of urine occurs in the bladder, the detrusors pull open the constrictors at the vesical neck and allow the urine to enter the prostatic urethra; here it excites urgent desire to pass water. The prostate muscle closes down, and if the voluntary compressor of the urethra relaxes, the urine passes out; if not, it is forced backward into the bladder, the prostate acting as an involuntary circular

sphincter. A peculiar enlargement, known as hypertrophy, occurs in men after fifty-five or sixty, in about the proportion of one in three. The enlargement is a senile change. Although an homologous growth, the enlargement is not a true hypertrophy, as it affects often only portions of the gland. Sir Henry Thompson found out of one hundred and twenty-three cases, seventy-four of general enlargement; in nineteen cases, both lateral and median lobes enlarged, but most in median. In five cases only was the enlargement confined to the lateral lobes. To what cause this senile change is due, is not settled. It is not an inflammatory change. The growth consists chiefly of increase in muscular tissue and incidentally of gland structure. Sir Charles Bell believed the hypertrophy to be caused by any source of irritation which caused frequent contractions of the organ. Others regard it as a senile change akin to arcus seniles and arterial degeneration. Thompson regards the prostate as an analogue of the uterus and possessing the same tendency to develop homologous growths—this tendency existing in the female between the ages of thirty-five and fifty, and showing itself in uterine hypertrophy or tumor, and in the male between ages of fifty and seventy, showing a tendency to similar formations in the prostate. That portion of the gland which exhibits the closest analogy to the uterus, viz.: the so-called median lobe, is the part most liable to these disorders. Reginald Harrison recently endeavors to establish the theory that prostatic enlargement is a result and not a cause of retention and bladder disease. He says from various causes the trigone or least muscular part of the bladder becomes weakened and depressed in form and allows a little urine to remain. This excites repeated efforts of the adjacent muscles to expel the residual urine. Thus the median portion of the prostate, and ultimately its entire muscular structure, become hypertrophied. This does not account for those cases where the

hypertrophy is not confined to the muscular structure, nor to the development of new growths. If this was the chief cause, it might be expected in obstructive disease of the urethra, as stricture, when the muscles of the bladder make prolonged and violent efforts to empty it; and yet, as is well known, prostatic enlargement is not a constant or common result. Billroth says the so-called hypertrophy of the prostate is never connected with the formation of new gland tissue, but depends upon the diffuse or nodular form of myoma. Dr. Gross shares this view. It will be seen that the enlargement may occur from different forms of disordered nutrition. There may be hyperplasia of either the stromal or gland elements, or both, constituting true hypertrophy, or the development of a new homologous growth identical with the uterine myoma, or so-called fibroid. The hyperplasia of the gland element is similar in character to the adenoma of the mammary gland. The favorite locality of these nodular forms of myoma is in the posterior and upper portion of the gland, the so-called third lobe. A reciprocal heredity between uterine myoma and prostatic hypertrophy has been observed—prostatic enlargement in the father predisposing the daughter to uterine myoma, and myomatous uterine growth in the mother disposing the son to prostatic hypertrophy. It would be interesting to know, in this connection, whether the Negro race, in whom uterine myoma are very rare, are equally exempt from prostatic hypertrophy. This type of diseased nutrition is not wholly confined to old age. Dr. Mudd of St. Louis found a myomatous tumor in prostate of a boy thirteen months old. It was connected with the median lobe and had caused retention. The fact that myomatous growths occur with equal if not greater frequency in single women would seem to indicate that sexual activity had but little influence in developing prostatic hypertrophy. It is no doubt an inherent tendency in the structure—that is, the

prime etiological factor aided by any cause that induces congestion and flow of blood to the parts. Enlargement of the prostate is not so important in itself as in its results. The obstruction to the outflow of the urine, and the consequent disease of the urinary tract posterior to the obstruction, are the important features. A marked degree of enlargement may exist without inducing symptoms that attract attention. Mercier says fifty per cent. of men above fifty have prostatic hypertrophy, but of these only about seven per cent. suffer pronounced symptoms. The enlargement does not of necessity cause pain even during urination. The degree of induration dependent on the development of connective or fibrous tissue, or the presence of inflammation—often a result of improper instrumentation—have more to do with causing pain than mere swelling. The prostatic urethra is changed in character in all cases of enlargement, but the degree of obstruction depends upon the locality and nature of the enlargement. The length of the prostatic urethra is always increased, often doubled—a fact to be borne in mind when a catheter is needed. This may not involve much hindrance to the outflow of urine. If the lateral lobes are mainly the seat of the enlargement, the urethra, though elongated and narrowed, is increased in vertical diameter and no considerable obstruction exists. If one lobe is involved, the urethra will be turned to one side; when the median lobe is involved, more interference with the egress of urine is found, but even here it is not always marked. The floor of the urethra is pushed upward in this form of enlargement, and when combined and continuous with enlargement of one of the lateral lobes, the urethra may become very tortuous and curved, both laterally and upward. The same is true when circumscribed masses jut out into the canal from the floor of the prostatic urethra. The obstruction is specially great when the middle lobe at its posterior portion juts

upward and partially closes the urethral orifice. An examination per rectum will not always indicate the degree of obstruction; the enlargement may be eccentric and not obstruct the vesical orifice to any considerable degree. Again, but little swelling may be found in the rectum and much hindrance exist at the urethral entrance, because the swelling or hypertrophy is centric. Belfield reports a case of myoma of the middle lobe as large as a hazel-nut, occurring in a man seventy-three. It was attached by a short, narrow pedicle; it was twisted off and the man recovered. These tumors growing in the median lobe, like uterine myoma, move outward in the direction of least resistance, and thus jut out and upward toward the bladder, converting the urethral orifice into a small, crescentic opening and, by a valve-like action, further interfering with the outflow of urine. When expulsive efforts are made, the meatus is raised, in these cases increasing the sac or pocket in the bladder, in which residual urine constantly is found. The walls of the bladder become diseased, when prostatic obstruction continues, from various causes. The venous supply of the penis and bladder forms a plexus about the under side of the gland. These veins are pressed upon and their circulation impeded with a consequent passive congestion and engorgement of the structures involved. The efforts at a complete evacuation of the bladder induce hypertrophy of its walls, and many times the hyperplasia of the prostatic muscle extends to the muscles of the bladder. The bladder often becomes sacculated because of the force exerted by the longitudinal fibres forcing the mucous coat between them. The phenomena caused by an enlarged prostate are not often referable to the organ itself, but to the bladder whose ability to empty itself has been interfered with. No symptoms are found in many cases in the early stages of enlargement, and are usually noticed as increased frequency of urination, with loss of expulsive power. The man

has to get up in the night, one to four or more times, to empty his bladder. This is peculiar to prostatic enlargement as an obstructive agent in contradistinction to stricture, which is most quiet at night. The expulsion is not as usual increased by voluntary effort. The stream starts slowly and is deficient in force; there is often sympathetic disturbance in the rectum—a feeling of fullness, as if the rectum was filled with fæces, yet unrelieved by efforts at evacuation. The man often imagines he has piles. These symptoms are often most marked when the urinary obstruction is slightest, as the prostate pushes more into the rectum than into the bladder, the fæces are flattened and the man thinks he has rectal stricture. The ease with which the man passes water varies; at times there is but little trouble; again, the expulsive power seems feeble, and he empties his bladder slowly and with difficulty. Whenever this array of symptoms is found in a man sixty or upwards, it is a safe inference that he has prostatic enlargement. The diagnosis may be corroborated by examination through the rectum, but it should be remembered that a negative result here does not prove that the symptoms are not the result of prostatic enlargement. The symptoms often simulate those caused by stone, by stricture and neuralgia of the vesical neck. Age is a factor of importance in discriminating from stricture. The expulsive power, too, may be voluntarily increased in stricture. In stricture the stream is narrowed; in prostatic obstruction it is usually full. The symptoms caused by stone are worst during the day and more quiet at night, which is the reverse of prostatic obstruction. The sudden interruptions of the flow, attended with pain and passage of blood, are peculiar to stone. Pain in end of penis occurs in both conditions; stone, too, often exists in connection with prostatic obstruction, which tends to cause it. Neuralgia of vesical neck is a disease of earlier life, and not often found in the period subject to prostatic

enlargement. If unrelieved, the symptoms depending upon obstruction gradually grow worse, the efforts to empty the bladder are more and more unsuccessful, and the amount of urine remaining in the bas-fond gradually increases. This partial retention comes on very gradually and is apt to be overlooked; the calls to urinate become more frequent and more urgent, and the man imagines himself suffering from irritable bladder that will hold but little, when the truth is it is holding too much and he is merely from time to time passing off the excess. Sometimes this condition comes on so slowly and the bladder is so tolerant that its walls become slowly atonied, so that it allows full distension and finally overflows without great pain or discomfort. The man complains that he cannot hold his water, that his bladder is so irritable that the urine constantly dribbles away as fast as it comes into it. A fact that seems to support this view and makes it difficult to convince the patient that he is not making water enough, or that he is carrying a large amount constantly in his bladder, is that the quantity of urine passed in twenty-four hours is as much or more than normal. There is an actual polyuria. The pressure has extended up the ureters, which are often dilated into the pelvis of the kidney. The disease is then well advanced (urine will show low specific gravity, 1.003 to 1.006); has passed into the third stage of its course with beginning disease of the kidney. Frequently there is less catarrh of the bladder and less irritability of the vesical neck than in other forms; the bladder merely passively dilates until, stretched to its fullest capacity, it overflows. It is important to distinguish this overflow from real incontinence, which, though rare in connection with prostatic obstruction, does occur. Sometimes after a period of more or less pronounced signs of prostatic enlargement, complete retention comes on suddenly, caused usually by some imprudence—exposure to cold, rough riding, excess in drinking

or sexual excitement. Acute congestion supervenes, with sufficient swelling to close the urethra. In other instances the bladder is not tolerant; the congestion around the neck is decided and extends to the vesical walls; the residual urine decomposes and sets up cystitis; the muscular tissue is constantly stimulated and becomes greatly thickened and hypertrophied; the urine is alkaline and irritating, and adds to the pain and irritation as it passes into the prostatic urethra. The general health suffers more in this class of cases; they have indigestion, nausea, and are prone to a low, feverish condition. Altogether, this class of patients suffer much more from the condition of the prostate than the first named. We will next briefly consider the management of prostatic enlargement. When in a man of fifty-five or upward, increasing frequency and lessening expulsive power begin to attract attention, prostatic obstruction may be suspected and an investigation instigated. This may be done as already noticed and by examination per urethra. This will serve two purposes: first, the condition of the prostate may be ascertained approximately, at least; let the man empty the bladder as completely as possible before using the catheter. If three or four ounces of urine are drawn off after its introduction, the bladder is not emptying itself. This is an important fact, although the urine withdrawn may be clear. If ropy, cloudy or offensive, it is yet more important.

If it is noticed that a catheter with a short curve does not reach the bladder, or that the instrument must be much depressed between the legs before it will enter the bladder, the presence of enlargement in the prostate, causing elongation of the canal and an elevation of the vesical entrance, is rendered certain. If the swelling and tenderness is not great, a steel sound or Thompson's searcher may be used to ascertain the presence of stone and to map out the condition of the prostate with greater ac-

curacy. This, if done, should precede the evacuation of the urine. The use of the catheter is also a means of determining the presence or absence of stone. After the bladder is emptied in prostatic obstruction, a feeling of ease and relief follows. If stone is causing the trouble, the reverse is true. In this class of cases, the important thing is to keep the bladder regularly emptied, and to prevent the accumulation of residual urine. The catheter should be used daily or once in two days, or sufficiently often to accomplish this result. The medicinal treatment of enlarged prostate is not very satisfactory; the use of ergot has been followed by good results. Its power to stimulate non-striated muscular fibre renders it as applicable here as in uterine myoma. It has also a beneficial action on the blood vessels and walls of the bladder, lessening congestion and improving the weakened muscles of the bladder in atonied conditions. Langenbeck has used it for this purpose with success. Hydrochlor. ammonia and potass. iod. have been recommended for this purpose, but experience with medicinal agents, in the control of uterine fibroid, does not encourage faith in their use in prostatic hypertrophy. The hygiene of the bladder is important. While too frequent calls to urinate should be resisted, long neglect will weaken the bladder and increase the prostatic irritation. Exposure to cold, chilling the surface, horseback riding, or riding over rough roads should be avoided. Malt liquors are specially to be avoided, as are all excesses in eating or drinking. While violent exercise is to be avoided, sedentary habits and inaction are equally to be avoided. The difficult, slow urination on first rising in the morning is a result of the prolonged decubitus. While constipation is to be avoided, no harsh active cathartics are admissible. Anything tending to excite pelvic or hemorrhoidal congestion is injurious. Many cases of retention occur from sympathy with

hemorrhoids, when but little prostatic enlargement exists. Hot rectal douches given with the double current tube are often valuable in stimulating the bowels to move and to soothe the congested prostate, when pressing on the rectum. The urine may be kept non-irritating by acetate or citrate potass., or other alkalies, as may be indicated. Corn silk is specially useful in relieving vesical and urethral irritation. Sometimes suppositories containing ergotin, belladonna or opium, are of service in controlling vesical irritation. Many times the first knowledge of your patient is, you call to relieve him from a sudden retention; he is impatient, nervous and irritable; wants and needs immediate relief, and it is important that he have it.

Such an attack of retention may hopelessly impair the contractile power of the bladder and may by reflex action arrest the secretion of the kidney. Before attempting to empty the bladder, see that the man is kept warm. Do not needlessly expose the surface so as to chill him. Place him in a recumbent position with the limbs flexed on the body and the shoulders raised. Use, if possible, a Nelaton or Jaqques catheter of not less than No. 8 calibre, and see that it is warm, oiled and perfectly clean. If difficulty is found in passing it, it may be coated with collodion in the outer two-thirds, or, what is better, a small bougie, No. 1 or 2, carried down toward the point, leaving the last two or three inches free. Even this may fail. The channel through the prostate and its relations to the vesical neck may be so changed that it will not pass. Next try a gum elastic, with olivary point, or passed on a stylet with long curve; then, as the point of the catheter strikes the elevated median lobe, withdraw the stylet an inch or more, depressing the outer end sharply, and it will ride over into the bladder. Do not undertake to reach the bladder in these cases with a short curve, and do not use force; the canal is seldom obliterated, and if

you get the right direction, no force is needed. It is a good plan to keep catheters on an overcurved stylet; then when they are used without it, they tend to tilt upward at the point and thus override the obstruction. In some extreme distortions the eloonal catheter of Mercier may be useful, but it will be seldom that anything else than those already mentioned will be needed; do not, under any circumstances, use a hard catheter in such cases. After the instrument has passed into the bladder, the flow of urine may suddenly stop, before the bladder is emptied, from the plugging of the catheter. A little warm water, or better, warm solution of borax or soda thrown into the catheter, will clear it. Sometimes the urethra and prostate are exquisitely sensitive. This may be obviated by injecting a solution of cocaine a few minutes before using the catheter, and then injecting a teaspoonful of olive oil just before using the instrument. The finger in the rectum may be used sometimes to tilt up the point of the catheter, so as to glide it over the obstruction. If much difficulty has been experienced in the introduction of the catheter, it may be left in the urethra twenty-four or even forty-eight hours, especially if it is a rubber one. An olivary point would not be safe to leave, as the neck, which is slender, might be softened and easily broken off. Another class of cases are met with. A man consults you for incontinence; he tells you he cannot retain his water; for some time past he has been compelled to urinate, often passing an ounce or two at a time, and latterly it dribbles from him continually. These cases come on very gradually, and the bladder will often be found holding three or four pints. The danger here consists in its sudden evacuation; to suddenly empty such a bladder is to invite the speedy destruction of the patient. Many such a case, in fair condition when they applied for relief, has, after complete evacuation of the bladder, sunk into a low, febrile condition, with symptoms of cystitis and

finally suppression and death. If the bladder has been long overstretched, remove only a pint or two at once and take the tension off gradually. After being once emptied, it must be kept so by the use of the catheter—passed once in six hours, as a rule. If the urine is offensive or ropy, or there is any evidence of catarrh in the mucous membrane, the bladder must be cleansed by irrigation. Warm water, with borax, glycerine, hyposulph. soda, salicylate soda, boric acid may be used. If a tendency to hemorrhage exists, hammælis, ergot, or plumbi acetas will be beneficial. If phosphatic deposits form, nit. ac. will help to prevent them; also acet. potass. If the case is an old one, nit. sil. or infus grindelia robust is useful. The irrigation may be practiced without removing the catheter, by attaching a rubber tube to the end and allowing a quantity proportionate to the previous dilatation to run into the bladder. This may then be allowed to run out and the process repeated until the water returns clear. This process is valuable to relieve congestion and irritation about the prostate and vesical neck, whether catarrh is present or not. In these cases the man must be taught the use of the catheter, as it will be his only means of relief. The bladder, after so long distension, rarely regains its power of voluntary evacuation. It is said that in acute congestions of the prostate, following excesses in eating or drinking, that Queen of the Meadow has been very efficacious. I have no personal experience with it. Couch-grass I have found very useful. Hard catheters should be avoided, except when false passages exist. The use of large calibres avoids this difficulty, sometimes. If the catheter is used too frequently, congestion, irritation, polyuria and kidney disease are induced. The frequency must depend upon the case, only being used often enough to prevent decomposition in residual urine. Three drops amyl. nit. to pint water arrest the tendency to change in urine in marked

degree—sometimes one-tenth per cent. potass. permang, one-sixth per cent. carbolic acid, or one-half per cent. resorcin. A caution is needed in the use of cocaine; under its action a greater danger of creating a false passage exists than when the sensibility is intact, but under no circumstances should force be used. The water used for injecting should be strained. Cases have occurred in which small portions of foreign matter have passed into the bladder and formed a nucleus for stone. Operative procedure should be reserved for a *dernier ressort.* Newman of New York and others before him have used the galvanic current to destroy the enlarged median lobe. Dr. Harrison does an external urethrotomy and forcibly dilates the prostatic urethra. His results have been very good, and the method seems preferable to any of the operative procedures in vogue.

PAINLESS TREATMENT OF RECTAL DISEASES.

BY H. M. BROWN, M. D., HILLSBORO, OHIO.

It has occurred to me that in the vast majority of cases physicians are, or have been, upon the background in the treatment of rectal diseases. First, because they have not given the subject any very considerable thought as to the methods of the application of treatment; and secondly, the quack rectalist has made such flaming promises of prompt and speedy relief without pain in all cases of rectal diseases that he has, until of recent date, had a corner on the treatment of such cases.

A few years ago, after having watched with mingled wonder and curiosity the moneyed people of my community making haste to their specialist, so-called, their rectal savior, on his regular monthly visits, and the seeming satisfaction with which he treated them, it occurred to me that a more thorough investigation into the alleged painless treatment might be of some benefit to the exchequer of our local profession, thinking that, being always on the ground, we would have a better chance to get them through satisfactorily, than anyone who made his treatments at intervals of a month. Accordingly I began to look about me in earnest for a plan of treatment of rectal diseases that would give results and be free from pain and surgical operative measures, which have always created such consternation among patients of that class.

Having long experimented in cases of the kind, I have finally arrived at a plan partly my own and largely

borrowed, which, so far as my own success is concerned, I can cheerfully and conscientiously recommend as being perfectly satisfactory.

I shall confine these few statements exclusively to hemorrhoids, fissures and ulcers.

With external hemorrhoids, or tabs of flesh which are ever and anon becoming swollen and congested and paining the patient most severely, my practice is to take an eight per cent. solution of cocaine and fill a hypodermic syringe with it and inject directly into the little tumor. It swells up like a bladder or blubber by distension, and is completely anæsthetized almost immediately. I then take a pair of scissors curved upon the flat, and boldly cut it off close up to the wall of the anus, to which it is attached. The patient does not feel it at all. Have at hand some absorbent cotton and saturate a small bunch with Monsel's solution and apply it, to control hemorrhage, and the patient never hears of it again except, perhaps, in rare cases there may remain an irritable crack at the site of the separation after recovery that will be sore and annoying. Should such occur you can easily cure by the following procedure: Take a bivalve speculum; introduce, dilate to its utmost (which in itself will sometimes cure); brush the parts with a twenty per cent. solution of cocaine and allow it to remain for a minute or two, and then treat it with chromic acid after the manner of Frank H. Bosworth for cauterization of the mucous membrane of the nose. A great deal of care should be used in the application, else the treatment will not be painless. The method of cauterization with chromic acid by Professor Bosworth is substantially the following: After the parts have been brushed several times with the twenty per cent. solution of cocaine, they are then wiped dry with a pledget of cotton. The application of the chromic acid is then made in this manner: A very small and slender probe is dipped in a little mucilage, and subsequently, by means

of the adhesive properties of the mucilage, three or four little crystals of chromic acid are attached to it. The probe holding the crystals should then be held over the flame of a lamp until the acid is fused into a small, round tear. Care should be used that the acid be not burned, as it makes it dry, so that it cannot be separated from the probe. In this manner the acid can easily be carried to the parts we wish to cauterize without the danger of accidentally applying it to other tissue.

This, then, is the treatment I have found most useful for fissure following the removal of tabs of flesh by surgical means.

Regular fissures of the rectum have been treated by me in the following manner: The cocaine and dilatation is carried out in the same manner as the preceding. A solution of equal parts of carbolic acid and sweet oil is carefully touched on the bottom of the fissure; the speculum withdrawn and a half ounce of sweet oil injected with a small, smooth syringe, and retained. This should be repeated at intervals of a week until the fissure is well, provided the first application does not cure.

I have had frequent cases of irritable or hysterical rectum in which there was no disease to be discovered, but morbid tenderness and sensitiveness, barring any possibility of a satisfactory evacuation of the bowels or examination by the surgeon. Those cases are so simple in their cure, and yield so quickly, that it is a pleasure to have them under observation. Simply inject a few drops of a twenty per cent. solution of cocaine and wait about three minutes, then introduce your bivalve speculum and dilate completely. Repeat every other day, and your patient will be well in a couple of weeks.

The treatment I have adopted for internal hemorrhoids or regular pilesacks is fully as satisfactory as that for either of the preceding maladies. It consists of the following easily applied treatment: An Aloe speculum of the medium

size (which is even better than that of Brinkerhoff in this particular case) is introduced with the door in the direction of the tumor you wish to treat. Then withdraw the door until the congested pilesack begins to drop into the lumen of the instrument. Wait until it runs full of blood, which will only be a minute, by reason of its being relieved of the pressure of the closed speculum and allowed to spread itself in the open door of the instrument. Then with the long-needled hypodermic syringe made for the purpose, inject deeply into the sack fifteen drops of a six per cent. solution of cocaine, made with Pond's Extract Hamamelis, instead of water. I do not believe that local anæsthetic measures are necessary in the treatment of hemorrhoids, for, as a rule, the internal ones are not sensitive, but I use that mixture because I believe it stops the circulation in the tumor and prevents the extended effect of carbolic acid, and insures purely local action of the drug. It also serves the purpose of preventing hemorrhage outwardly through the puncture and consequent leakage of the medicine. After waiting a couple of minutes, inject near the site of the puncture already made five drops of equal parts of glycerine and carbolic acid. When your patient returns at the end of two weeks, you will be delighted to find that that one particular tumor has forever disappeared and you are ready for another one, and so on until all have been cured. A second treatment is rarely necessary.

Always remember to treat hemorrhoids inside the rectum, and never outside. Should they be protruding, return before treatment is begun.

To attempt to give any detailed account of the prevalence of rectal ulcer, and the misery to the human race dependent thereon, would extend these remarks beyond the limits assigned them.

I must, therefore, confine myself in this, as in the pre-

ceding maladies, to a mere statement of the treatment that I have used, and in which I have so much confidence.

In the first place, however, I would remark that after a very careful and earnest investigation of about one hundred and fifty cases, I am compelled to believe, with Allingham, Brinkerhoff and Ryan, that ulcer of the rectum is far more frequent, and is capable of doing incalculably more injury to various organs, than has been heretofore conceded to it by the profession at large. I believe that a curable ulcer can be cured by the plan of any one of the foregoing gentlemen, provided their course be diligently applied. All that I have to offer in the treatment which I recommend over any other of the treatments in use is, that I believe it to be more prompt in its results than some others.

There are four cardinal points to be observed in the successful treatment of rectal ulcer, viz.: (1) Prevention of constipation; (2) absolute cleanliness; (3) thorough exposure of the ulcer cavity so that it can be plainly seen when treated; and (4) the application of some remedy that will insure rapid and thorough granulations of the indolent sloughing surface.

To meet the first indication, I am in the habit of having the patient thoroughly wash out the rectum after each evacuation with warm water injected by himself with a large, curved, rectal syringe, using at each sitting as much as a pint or more of water, and thoroughly evacuate again immediately. The rectum is then free from any irritating substance for the time being. I always direct that this should be done in the morning, and should the bowels not be inclined to move at that time, administer a laxative so as to insure its performance regularly every morning. Repeat the process at night, whether the bowels are inclined to move or not. Always follow the night injection with the injection of an ounce of water containing about 15 grains of boracic acid, 5 grains of sulphate of zinc, 3

grains of alum, and retain. The patient should then go immediately to bed, lying upon the back for a period of fifteen minutes or thereabout. This last procedure is recommended on account of a fancied belief upon my part that something may be gained by giving the fluid the benefit of gravity in the direction of the ulcer cavity, which is nearly always in the posterior wall of the rectum.

To thoroughly expose the ulcer cavity the patient should be placed on the left side, with the knees well drawn up towards the chin. I have been in the habit of using different speculums, to be indicated by the region, high or low, in the rectum, in which the disease may be situated. I believe that there is no speculum equal to the ordinary bivalve to expose and give room to work in the ulcer cavity that is low down. It can be introduced and separated widely, and the ulcer will be clearly and distinctly in view. On account of the bivalve having no circular rim to handicap your manipulations, you will be able to depress or elevate the handle of your ulcer probe (I always use a small, dull, uterine curette, made after the fashion of that of Dr. Thomas) in an almost unlimited degree, so as to clear out the cavity thoroughly and rapidly should it be impacted. With the Brinkerhoff or other instruments of that pattern, no such freedom of action can be obtained. Should the ulcer be so high that it is beyond the reach of the bivalve speculum, we then have recourse to the Aloe, with which a very clear view of the ulcer may be obtained by applying in the same manner as recommended for hemorrhoids.

After having exposed the ulcer well, scrape it out gently until every vestige of matter of whatever nature is removed, and the surfaces are somewhat freshened. After that is accomplished, brush the entire surface of the cavity thus made clean with a twenty per cent. solution of cocaine. Wait two or three minutes, and then dip a cotton-wrapped probe into a solution of equal parts of carbolic acid and

oil of ergot, and quickly and carefully apply to the freshened surface of the ulcer until it is changed to a pale color. Remove the speculum, inject into the rectum a half ounce of sweet oil, and your treatment is finished for that time. Sometimes this plan of treatment burns after an hour or two, provided the cocaine was not well applied. Anticipating such a result, the patient can be directed to remain for an hour or two, and should it occur, a second application of cocaine will relieve the difficulty. I have known the after suffering from this treatment to be so great that rather persistent stranguery has been produced, but never when the application was confined to the ulcer cavity. This treatment should be repeated at intervals of sixteen days, and the cleansing and astringent injections assiduously kept up during the intervals (laxatives being given when necessary), and your patients will nearly all get well in periods varying from a few weeks to several months, or at most a year, depending upon the severity of the case.

As a matter of course (and it is a lamentable fact), cases will occasionally come under the care of the physician which have been neglected so long as to become almost hopeless, and complete failure is sure to be the result, no matter what treatment may be employed.

EXTERNAL MEANS IN THE DIAGNOSIS OF PREGNANCY.

BY E. S. McKEE, M. D., CINCINNATI, O.

This question is one of much importance and probably one of the least overdone of the subjects which might be brought before this society.

The average obstetrical student, in this country, knows little of the external means of diagnosis in pregnancy. It is in the great lying-in hospitals of Germany, Austria and Dublin that the art is best taught. The *tactus eruditus* is probably as capable of cultivation in this direction as in any other, and experience here, as elsewhere, is an excellent teacher.

Credé, in his recent work, teaches that women in labor and in the lying-in state are diseased only through infection from fresh wounds. "He who does not examine a woman cannot infect her." Such is the maxim of Credé. Seldom or never do we find the course of a child-birth unaccompanied by solutions of continuity. The larger of these are generally made by some artificial assistance to parturition. From the most careful digital examination, we may have some wounds, hence we should dispense with these entirely, or restrict them to the fewest number possible. The digital examination is altogether omitted in normal labors, for weeks in succession, at the lying-in hospital at Leipsic, especially if there be much sickness present among the women. This omission is followed by the most favorable results. In every labor external ex-

amination should be given greater importance and the internal only permitted where positively demanded. In total abstinence from vaginal examination, we then have the surest prophylaxis against infection.

But we must know the position of the child and the stage of labor. To learn this, we must use wisely and well all the external means of diagnosis.

Inspection is one of the first of the external means at our command. This should begin with the face, where we are often able to see a peculiar brownish pigmentation called la masque or chloasm. Inspection of the breasts reveals the pigmented areola or the tubercles of Montgomery. The size of the abdomen and the brown line extending down the center are to be noted. The umbilical cicatrix, by its depressed, obliterated or protruding condition, shows, to a certain extent, the stage of pregnancy. Yet enlargement of the abdomen from other causes may produce this. Bandl has pointed out the existence of a transverse and distinct furrow, about midway between the umbilicus and the pubes. This occurs when there is some abnormal obstacle to the expulsion of the child. If this is at all constant, which I doubt, and occurs only in abnormal labors, it would furnish a valuable indication for operative interference. It may also be taken as a warning of possible rupture of the uterus. This constriction is found at the junction of the cervix and the body. The linea albæ may be seen in multiparæ. Recent ones are of a livid blue, or rosy red, while old ones are white and resemble old cicatrices. Movements of the abdominal wall from the activity of the fetus may be often noticed; also a projection of the uterus through between the borders of the recti muscles when the patient lies in bed. Inspection tells us much as to the stage of pregnancy by the height of the uterus, with reference to the umbilicus. However, variations occur in multipara and primipara, and whether the preg-

nancy is single or multiple, plural pregnancy, non-reducible, oblique and transverse presentations, the height of the uterus cannot be taken to indicate the period of the pregnancy. Contracted pelvis, distention of the bladder or rectum, deformities of the vertebral column or thorax, tumors of the uterus, ovaries, pelvis and hydramnios further influence the diagnosis. Inspection will often tell whether the patient is in her first labor or not. If not the first, the breasts are flaccid and pendulous and the nipple enlarged and withered. The abdominal walls are flabby; often look withered and discolored; can easily be raised into folds, and sometimes the skin is pendulous and pouch over the pubes. This tends to dispel these signs. It causes the woman to fear you and excites reflex contractions of the abdominal and uterine muscles, which keeps the fetus removed from the touch of the examiner. The examination should not be the ordinary superficial kind, rapidly practiced under the clothing, but the systematic, scientific and accurate manipulation by which, in most instances, we are able to ascertain the existence of pregnancy, the position in utero, approximate size and general conditions of the fetus and the relations of the uterus. This information enables us in many cases to readily rectify mal-position, to facilitate expulsion of the placenta, and to prevent or arrest post-partum hemorrhage. Any abnormalities in form or texture of the upper part of the uterus or its appendages, or of the abdomen, can be detected. To palpate properly, the bladder and rectum should both be empty, the thigh flexed on the pelvis with about twenty inches between the knees, decubitus as horizontal as possible. Lay one hand, warm, flat on the hypogastrium of the patient, so as to become accustomed to the contraction of the abdomen on contact with the hand. In a very short time this disappears and we can freely outline and ex-

plore the shape of the uterus. In case the muscles are still too firm, we can gain relaxation by talking to the patient, thus taking her attention away from herself. We can determine the size of the uterus by plunging the hand deeply into the abdominal wall, when we can grasp the fundus itself. By making alternating pressure with the hands on each side of the tumor, we can displace the solid body. The shock with which it strikes the side we may call abdominal ballottement. These shocks sometimes occur of themselves and they are then due to fetal movements. Pajot calls them fetal shocks. It is also sometimes appreciable by auscultation. By the simple pressure of the hands, we may be able to recognize the presence of a living fetus and the volume of the uterus, and thus establish absolutely the diagnosis of pregnancy. We can then determine the presentation and position. The head we find a round, hard, partially displaceable mass, more or less perceptibly separated from the trunk by the depression of the neck. This depression varies according to the flexion of the head. I have not met with the parchment-like crackling sensation found under favorable circumstances by firm pressure on the head. The nates also form a hard, rounded and moderately movable mass, but the distinctness of these characteristics is less marked than in the head. In the normal position of the fetus, the feet are a smaller and less prominent part. They partly float in the liquor amnii and may be displaced with the utmost facility by one hand; they do not return to their place with the quick rebound which within the head and breech gives the sensation of ballottement. The heel or sharp maleolus can sometimes be felt, if the abdominal walls are thin and the conditions for palpating favorable. Indeed, the whole foot may, in some instances, be grasped in the hand. The back is found between the head and breech. The fetus being curved upon itself, the back is more appreciable on one

side than the other. If we now alternately depres the two lateral walls of the abdomen, we will find feeling of fullness and resistance on one side. The bac furnishes a line of greater and more uniform resistanc than the front. Upon the front will be felt mobile parts– the limbs of the fetus. In cases where the abdomina walls are thick, fetus very movable, amniotic fluid abun dant, and it is difficult to decide the points of diagnosis Budin advises to seize the breech in the hand and force against the cephalic extremity. We thus increase th dorsal convexity and render it more prominent, and th back is applied more forcibly to the abdominal wall; it i entirely engaged and we can only appreciate the back c the head. When the head is above the superior strait with one hand we can recognize both its presence an mobility. Pinard has drawn attention to the fact tha when the head is flexed, as it must necessarily be for en gagement, there must be depression of the occipital pro tuberance on the one side and an elevation of th forehead on the other. The side which offers the leas resistance will correspond to the occiput and the other t the forehead. This demonstrates to us the direction c the back, which will be on the side opposite the fore head.

Failing to find the head in the superior strait, we mus look elsewhere. It may be far removed; it may be i one of the iliac fossæ. In the latter case we have onl to slide the hands a little farther to each side. If abov the umbilicus, we find it in much the same way and dis tinguish it by its roundness, resistance and mobility, whic prevent our mistaking it for anything else. The absenc of the depression or furrow corresponding to the neck i an item of importance in searching for the breech.

When possible to palpate the anterior shoulder, it ofte shows reliable evidence, for it is always found in the sam lateral half of the pelvis with the occiput. When th

head has engaged it, it forms a prominence above the superior strait, lying on the left side in the first position, on the right in the second.

Abdominal ballottement may be made with one or both hands. It is one of the most reliable symptoms of pregnancy. Yet Pajot has found it in a woman not pregnant, but suffering from a multilocular ovarian tumor. It can only be obtained after the fourth month, and is especially useful at the sixth and seventh months. Hydramnion and multiple pregnancy prevent it.

The sensation has been described as that of a piece of ice floating in a vessel of water and striking against the sides. If cephalic ballottement is once fully appreciated, it cannot be confounded with anything else. The placenta can sometimes be determined by palpation when it is placed anteriorly. It is recognized as a fleshy mass, which raises the palpating fingers from the fetal surface.

Palpation, though not a certain proof of the death of the fetus, can often determine this condition. The hand discovers an unusually flabby and compressible condition of the abdomen, contrasting sharply with its former firm and elastic feel, and motion is not distinguishable. The body remains passive in any position in which it is pushed. The size of the fetal head and the presence of hydrocephalus can be made out by palpation. We can measure the fetus with the calipers, which are applied to the head and breech. This shows one-half the length of the fetus, thus giving the age and the size of the uterus.

A case is reported by Biddle, in which the cord was found passing transversely over the back by palpation, and also inspection. It was easily movable, but could not be slipped over the breech. It pulsated one hundred and fifty-two times per minute and measured at birth eighty centimeters.

In favorable cases, twins may be detected by palpation. The presenting part may be fixed; other parts movable.

The great sign is the presence of two absolutely parts as heads or pedal extremities. Three la may be made out or two found separated by s tances as to make it impossible for them to belo same fetus.

Intermittent uterine contractions, first brough notice by Braxton Hicks, are almost infallibly pe the pregnant uterus. These contractions may b soon as the uterus has ascended above the pubes, be produced by pressure or friction over the Previous to the fourth month it is necessary to e bladder to obtain the sign. It is constant; is n lated by any other condition, and is one of t valuable of all means of obstetrical diagnosis. Th every five or ten minutes, and are present whe fetus be alive or dead.

Abdominal tumors, such as uterine fibroids cysts, etc., are usually only accessible to palpatio pregnancy. Their detection is often of the gre portance.

Fetal movements may be sensible or visibl necessary that we appreciate these movements o as we cannot fully rely on the statements of the Most women who desire or fear themselves to nant think they feel life. We should be especi ful about the menopause. The fetal moveme strong or healthy child are quick and active, there is a sufficient quantity of liquor amnii freedom of action. If the amniotic fluid is exce movements are rapid and flighty. As a rule, th the fetus and amount of liquor amnii are in inv portions.

Extra uterine fetation can be detected in som stances, but only when a distinct lateral tumor is This is quite unconnected with the uterus, and

nancy be sufficiently advanced, the fetal heart sounds and fetal parts can be ascertained.

Palpation ought to be practiced after auscultation, because manipulation disturbs the child, increases the heart-beat and modifies the results gained by auscultation.

Percussion has the least value of the means of external diagnosis. The degree of distention of the bladder is one of the most important of the things learned. Claims have been made that the diagnosis of pregnancy is possible at the second month by percussion, but these are unsustained. Light percussion sometimes produces a tympanitic sound, if the intestines get in front of the uterus. Forcible percussion, however, will bring out the full sound of the pregnant uterus.

Auscultation is one of the most important of the means of external diagnosis, yet it should not be exclusively relied upon, as is too often the case. The other modes afford valuable information, and the examination, to be systematic, accurate and thorough, should embrace all four. Mayer of Lausanne was the first advocate; Korgaradec, the first pupil. Depaul enlarged that scope of the means, and after some opposition it spread rapidly through Germany, France and England. In 1883 Depaul used auscultation to determine the position of the fetus. If a stethoscope be used, it should be of medium length, and the end piece should cover considerable surface. It should be held perpendicular to the abdominal walls and kept in position by the head of the examiner, avoiding all contact with the hand or clothing. The stethoscope is useful, but in the great majority of cases by no means indispensable. It is claimed that the point of maximum intensity can be more exactly determined by the use of the instrument; but it can be sufficiently accurately ascertained by the ear unaided. For myself, I prefer immediate auscultation, reserving the right to select my

cases; the stethoscope is probably better to get at the uterus when just above the superior strait. Auscultation enables us to hear the umbilical or funic murmur, the placental murmur, the pulsations of the abdominal aorta and the gurgling noises caused by the fluids and air in the intestines. Occasionally there may be heard a splashing noise, due to the movements of the fetus in the liquor amnii, the fetal shock, muscular subserous sounds, due to the friction of the uterus against the abdominal walls; others by the impact of the fetal limbs against the uterine walls; and by all means the most important aid given by auscultation is the recognition of the fetal heart sound. When plainly heard, these prove not only the presence of a fetus, but also enable us to affirm that it is living and strong. We can say with reasonable positiveness when we fail to hear the fetal heart-beat, having always heard it previously, that the child has ceased to live.

Twin pregnancies, as well as triple ones, can often be diagnosed by auscultation. In twin pregnancies there are two points of maximum intensity, then a point of minimum intensity, which should augment as we approach the respective points where the heart is plainest heard. The two hearts must have a different rhythm. If the sounds do not emanate from the same heart, they are plainly audible at several different points, and at intervening parts they are not audible or scarcely so.

Schrœder's statement that it can always be made out in a healthy woman and a healthy child is possibly a little too strong, though not much. With a moderate amount of practice, the fetal heart sounds can be heard without difficulty in almost every case. They vary in frequency from one hundred and twenty to one hundred and sixty beats. They increase in fetal activity and with the temperature of the mother. If the maternal temperature rises to one hundred and two degrees, the fetal pulsation is much accelerated, and if above one hundred

and four degrees, the fetus usually dies. There seems to be no definite relation between the frequency of the maternal heart-beat and that of the fetus. The intensity of the fetal pulsations varies with the fetal development, the thickness of the abdominal walls, the quantity of the amniotic fluid and the position of fetus. It is not difficult to distinguish between the maternal and the fetal pulsation, even if the maternal pulse is much accelerated; for the maximum of intensity is different.

The diagnosis of the sex of the child, from the number of the fetal heart-beats per minute, was a subject which at first attracted much attention and gave hopeful promise. Like many other new theories, investigation proved disastrous. It is now considered that the number of pulsations per minute will come much nearer determining the size and length of the child than its sex. We can doubtless say that the majority of cases in which the pulsations are less than one hundred and eighty per minute will prove males, and the majority above that number will be females. This comes from the fact that males are larger and heavier, generally, than females, the pulsations in larger animals being more seldom than in smaller ones. It has also been found that the pulsations in males are fewer per pound than in females. Broadly speaking, the pulsations in females are more rapid than in males, and in small children than in large; but these facts lose much in importance in isolated cases. If the pulse is repeatedly counted in the latter months, it will be found to vary considerably, as much as fifteen to twenty pulsations in consecutive minutes. This is, in some instances, probably due to the movements of the child, which greatly accelerate the heart-beats. As gestation progresses, the fetal heart-beat gradually diminishes in frequency. Increased size, hardness and firmness of the cranium in males, as compared with females, offers, in all probability, greater

promise of distinguishing the sex than the number of the pulsations; but here, also, exceptions are numerous.

The uterine souffle is a simple blowing or wheezing sound, synchronous with the maternal pulse and pretty generally audible over the whole uterus. It is never accompanied by a pulsation, and is not a certain sign of pregnancy, but one of considerable probability. It is rarely heard before the fourth month, though reported at the eighth and ninth week. The uterine souffle is sometimes palpable in the form of a distinct thrill in the immediate vicinity of the umbilicus.

The umbilical souffle is a blowing, hissing sound, synchronous with the fetal cardiac sounds, and is heard either in the place of these sounds or in addition to them. It probably originates in the umbilical cord, and is caused by some obstruction to the flow of blood through the umbilical vein or arteries; or, it may originate in the fetal heart itself when the valves are diseased.

Presentation and position can be diagnosed by auscultation. Depaul maintains that the heart is situated nearer the head than the pelvis. This, if true, would be of considerable worth in determining between these two positions; but this fact is denied by Matthews Duncan, who says there is really no appreciable difference in the fetus, and he lays no stress at all on this as a means of diagnosis. Ribemont has also shown by recent investigations that the heart is situated about equidistant from these extremities, the cephalic and pelvic. He thinks if there is a low position of the heart in cephalic presentations, it is due to the engagement of the head and the subsequent sinking of the trunk. In pelvic presentations the breech does not become so readily engaged and the heart is more frequently found high in the uterus. Abnormal conditions, such as deformity of the pelvis, abnormal insertion of the placenta, unusually large head or failure of the head to engage, may restrain it from entering

the superior strait, and the heart sounds are heard at a higher point. Chantreul and Tarnier also disbelieve in the difference of the heart-beat in the cephalic and pelvic presentations. In face presentations we have the heart sounds transmitted through the cardiac region of the fetus, the maximum of intensity being at the right, directly opposite to where it should be in head presentations. The head failing to engage, the sounds will be heard higher in the uterine cavity. The disagreement between auscultation and palpation will probably attract the attention of the examiner to the possibility of a face presentation. In the diagnosis of transverse positions, auscultation is much inferior to palpation. It may be stated in a general way that in the cardinal positions the maximum of the heart sounds will correspond to one of the four segments of the abdomen, which are made by drawing a line from the ensiform cartilage to the symphysis pubis, intersected by a line which divides the uterus into two equal parts. This line should not be drawn through the umbilicus, as has often been recommended, for that is a most migratory organ.

A knowledge of the position and presentation of the child before labor has advanced too far, may enable the *accoucheur* to change a transverse or breech position, or make a normal out of an abnormal labor.

Manifold and valuable are the advantages gained by use of the external means in the diagnosis of pregnancy.

TWO CASES OF ECTOPIC GESTATION.

BY W. D. HAMILTON, M. D., COLUMBUS, OHIO.

The subject of extra-uterine gestation possesses great interest for the practitioner of medicine. A desperate anomaly, usually insidious in its development, often fatal in its outcome, it challenges the attention of every thoughtful medical man. Of its pathology much has been written. Its causation and the conditions predisposing to it have given rise to much comment. The present tendency is toward simplification. Whereas it was formerly considered under a ten-fold classification, there are now those who assume that all varieties of it are originally tubal. Tait, Thomas and other eminent gynæcologists entertain this view, and the impression is gaining ground among those who are giving the subject attention, that such is the case. Parry cites three subdivisions—tubal, ovarian and abdominal. Tait, whose large experience would seem to justify him in generalizing claims that all ectopic gestations are at first tubal and that other forms date their peculiar character from the time of rupture of the tube and escape of the ovum. Interstitial pregnancy then means fecundation in the uterine end of the tube, while the ovarian probably traces its origin to the fimbriated extremity as the site of impregnation. "If," says Greig Smith, "rupture occurs on the *under* surface of the tube, where it is embraced by the broad ligaments, the ovum may develop in the enclosed cellular tissue and be extra-peritoneal." If it takes place on the *free* surface of

the tube, the ovum escapes into the abdominal cavity and may develop there." Unfortunately there is great dissimilarity in the histories of these cases. Frequently all goes well until the woman is suddenly collapsed, and again it happens that men who have had abundant opportunity to study the symptoms have erred in diagnosis. Such mistakes are not so common now as formerly. Furthermore, the experience of the past few years has thrown much light upon the recognition and treatment of this condition.

Authors agree that anything serving to interfere with the progress of the ovule through the tube favors the occurrence of ectopic gestation. Women who have been sterile for several years are more liable to anomalous conception than others.

Catarrhal salpingites, or actual occlusion of the oviduct, predisposes to its occurrence. Certain congenital malformation of the internal genitalia might also be cited as contributing a proportion of the cases. Undoubtedly a great deal remains to be learned in this connection, and if the conjectural part of our literature were eliminated, the *quantity* of it would suffer greatly.

As for the modes of treatment, which are worthy of consideration, practically only two are to be mentioned: (1) The employment of electricity to kill the fœtus, in the hope that nature will either cause the absorption of that which remains, or will accomplish its expulsion in some way or other; (2) some form of cutting operation, having for its object the delivery of the products of conception through the wound thus inflicted. The first method is adapted to the early weeks of gestation, while the second is broadly applicable to the whole period during which the child, placenta or portions of either are carried by the mother. The brilliant operations of Mr. Tait tend to reinforce the remark of Mr. Greig Smith that "A dispassionate consideration of the natural termina-

tions of the disease and of the effects of minor modes of treatment (electricity being the chief one) almost drives one to the conclusion that in all stages and under all circumstances abdominal section is the best *treatment.*" From this it appears that abdominal section is not urged by him as a *last resort,* but as a *mode* of *treatment.*

Case 1. Mrs. E. S. of Columbus, age 31, married fourteen years, the mother of five children, the youngest three years old. Family history good. Two years ago she miscarried. Has been regularly unwell all her menstrual life until the middle of last June ('87), when she menstruated normally; every month following, at least once and sometimes twice, there was a discharge of blood from the vagina which never exceeded twenty-four hours in duration.

In January, a few days after I first saw her, menstruation occurred and lasted a week. Just after its cessation she fell in her door-yard and within a day or two was obliged to go to bed on account of fever and pain, which persisted for ten days. During this interval there were occasional chills; the average pulse was ninety; the maximum temperature was one hundred and three degrees. About August 10 there were several attacks of very severe pain in the abdomen, principally in the left side, lasting an hour or two, and leaving intense soreness for several days. The physicians in attendance supposed that it was renal colic. She walked in a stooping posture after each of these paroxysms. That which came from the vagina at such times looked like coffee-grounds and probably consisted of small clots, expelled by the uterus. The presumption is that rupture of the under side of the tube took place during one of these painful experiences. December 10 a discharge of water proceeded from the vagina and continued for some weeks. Varying in amount; it was at first colorless, afterwards became offensive and resembled blood, more or less decomposed. Her general

health was fair until the time of her fall, after which *premature* and *spurious labor* occurred, terminating toward the latter part of January with the death of the child. In the words of the patient, "I felt a twisting as if something was crowded up there and trying to pull itself loose." This, perhaps the death struggle of the child, occupied about two minutes. She was seen by the writer, with Dr. Turney of this city, on the following morning, February 1. A peculiar sallow appearance gave her an ill-conditioned look. The abdominal tenderness was extreme, and the enlargement had undergone a striking diminution since the first examination five weeks before. Temperature one hundred and one, pulse ninety-six. A lobulated, irregular, doughy mass filled the lower left part of the belly. The right side of the abdomen was not greatly encroached upon. Vaginal examination found the softened cervix rather inaccessible, it being behind and slightly to the right of the symphysis pubis. The uterus, about five inches long, could be clearly outlined in an oblique, right, lower, anterior relation to the tumor. A large boggy mass completely filled the cul-de-sac. On inspection in the knee-chest position, the vagina looked purplish and vascular, and a detached shred of supposed deciduous membrane was seen. She entered Mt. Carmel Hospital on the same day. February 3, in the presence of several visiting physicians and the students of Columbus Medical College, abdominal section was performed. The adventitious womb was spherical in shape, very vascular and looked like a fibroid. Having made an incision into it large enough to admit the finger, the diagnosis was promptly confirmed, and a fœtus of seven and a half months was soon delivered through the enlarged opening. The walls of the new womb were thick and succulent. The placenta lay toward the left hypochondrium and was allowed to remain undisturbed. Thorough irrigation was employed, the peritoneal cavity shut off by silk stitches,

the cord left protruding; inside and outside drains were inserted and the operation was thus completed. Neither shock nor hemorrhage were present in any great degree. The temperature and pulse were practically normal throughout. Daily carbolized washing was used. The placenta was removed four weeks later, after which the opening would barely admit the finger, so completely had contraction taken place. She has been in perfect health ever since and has gained twenty pounds. Examination finds nothing abnormal but a three-inch cicatrix. The case was clearly one of the ligamentous variety of ectopic gestation, having been primarily tubal.

Case 2. Mrs. W. T. F. of Perryton, Licking county, Ohio, seen April 28 with Dr. W. W. Carter of Newark and Dr. McCann of Perryton. Twenty-eight years old, married six years; two children, youngest four years old. No miscarriages. For three years past free leucorrhœal discharge had existed. In December, 1887, and January, 1888, faulty menstruation occurred. In February, at what should have been the time for the catamenial flow, the patient was taken suddenly ill with vomiting and pains through the back, hips and pelvis. She improved within a few days so as to be able to go out driving. Only a short time elapsed, however, when another violent attack of pelvic pain occurred, from which she was slow in rallying. April 4, temperature one hundred and three, pulse one hundred and twenty; complained of constant pain in the region of left ovary, where palpation elicited deep-seated tenderness. No suspicion of the exact nature of the disease was entertained until April 15, when she passed by the rectum the pelvic bones and lower extremities of a fœtus, and two days later the left arm and a rib were seen; within a short time the other arm, a scapula, four ribs and both clavicles were extruded.

She was first seen by the writer April 29, when examination per vaginam showed the uterus to be somewhat

fixed and crowded slightly to the right. A lump as large as a goose egg occupied the cul-de-sac and groin, being formed by the head and placenta in their proper tubal investment. The finger, three and a half inches within the rectum, found a hole as large as a half dollar on the right latero-anterior aspect of the rectum and extending through its wall. Nothing loose could be discerned. In view of the uncertainty of nature's efforts, she was advised to enter the hospital, so that if at any time it became necessary to interfere, it could be promptly done. She declined to leave her home, however, and hoping that spontaneous discharge of the parts remaining would soon occur, waited for further developments. The bones of the head and face followed within a week of this examination. The fever temporarily abated. After May 5 no more osseous structures came away. Fever persisted for several weeks, however, and finally, on May 15, a mass including one ounce of placental tissue and eight ounces of clots was similarly expelled. In the next three weeks this was repeated on two different occasions. After the hemorrhage she was almost exhausted. Some transient febrile subsidence occurred each time. The temperature invariably rebounded, reaching a maximum of 104.8 degrees. There was progressive loss of flesh and strength after the first discharge of bones. She died of septicæmia and exhaustion, Friday, June 8. Unfortunately no autopsy was held. The specimens here presented are apparently the bones of a fœtus at about four and a half or five months. After its death took place, adhesive inflammation of the pregnant tube to the rectum occurred, which was in turn followed by ulceration of the tube and bowel. In this case nature made the diagnosis and devised the treatment, her method being so slow and exhausting the patient so greatly that death resulted.

Of the two cases which form the subject of this paper, the *first* bears upon Tait's theory that all ectopic con-

ceptions are primarily tubal, and emphasizes what successes elsewhere are frequently demonstrating to-day, that abdominal section is a *pre-eminently conservative* and *practical* mode of treatment for this condition; while the second case shows clearly that nature cannot always be relied on to expel the products of conception, even though she makes an apparently good beginning in this direction.

DISEASES OF THE SKIN DUE TO DEFECTIVE ALIMENTATION.

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The spirit of inquiry leads to analysis, while observation leads to synthesis. It is the latter that is receiving more attention at the hands of the profession at large than in time past. The crucible, the microscope and the scalpel have each contributed to medical lore, and the torch of inquiry has even illuminated some of the dark and mysterious processes of growth and repair.

All agree that to maintain functional vigor there must be structural stability, and structural stability depends upon a proper supply of reconstructives; but in what form administered to supply the waning vitality of this or that structure, we have only conjecture.

To clinical observation alone must we look for definite instruction.

In this line of thought let us trace the rôle which food plays in the healthful maintenance of the skin, as well as in those of its diseases which are dependent upon a disturbance of this great nutritive function.

In common with other organs the corium requires a plentiful supply of oxygenated blood, but in addition certain substances are here called for to supply the hair papilla, the matrix of the nail and the rete mucosum at large, with a coreneous element as well as an albuminous cement—bricks and mortar to house the ghastly mechanism of life with beauty.

Analysis teaches that these substances are most plentifully supplied from the outer strata of cereals. But a fine-haired civilization feeds only on the whitest flour, and casts this bristle-forming material to the swine, until, if observation be not misleading, there is danger that man in his most civilized state will lose his grip on his congenital hirsute adornment. But here again we must appeal to observation.

There is no doubt that, aside from the abnormalities of growth, defective alimentation is a potent etiological factor in cutaneous pathology. In infancy it appears most frequently as an eczema, while later urticoria and erythema are often met with. Of the former, Hardey* says that it often appears in infants from an insufficient supply of the nurse's milk; at other times the quality is at fault. It will also supervene upon too early weaning, when the child is fed with a little of everything.

That infantile eczema is sometimes a sympathetic disturbance, due to an irritation of the gastro-intestinal tract, like erythema and urticaria, seems highly probable; that it is frequently dependent on an aberration of nutrition is more generally admitted. The first is not only highly probable, but it is true as evidenced by clinical observation. The second is equally true, but it is viewed from two opposite stand-points. Thus the delicate skin of the infant in a state of malnutrition readily succumbs to irritating external agencies, which latter fulfills the requirements of the Vienna School of Dermatology, while the former supplies a *diathesis* to the French.

In adolescence, or between the extremes of life, the cutaneous affections arising from defective alimentation are first those in which assimilation and disassimilation are at fault, and second the neuroses.

In an address before the Medical Society of London,†

* 'Traité des Maladies de la Peau.' Paris. 1886.

† On "The Progress of Cutaneous Medicine During the Present Century." London. 1876.

Sir Erasmus Wilson said: "Well, our first six patients are adults, say between forty and sixty years of age; some have eczema, moist and dry, recent and chronic; some erythema; some gutta rosea, and some lichen. We inquire into the functions of digestion and assimilation; in the majority we find symptoms of gastric disorder, nausea, loss of appetite, flatulence, distension, constipation, all more or less confirmed. Our pen flies to the paper; we are about to prescribe; and for what? For indigestion and malassimilation. But our patient consults us for a cutaneous disease, not for his stomach or liver or digestive organs, with which he finds no fault, and which he is not aware of being in a state of disorder; while we, on the other hand, know the assimilative organs to be the cause of the irritation, and that if they be restored to their healthy function, all the cutaneous symptoms will subside and disappear. Undoubtedly, when the "*force majeure*" has been dealt with, we shall advise our patient as to some local treatment—an ointment, a powder or a lotion—for the immediate relief of the skin; but, practically, we treat the cutaneous affection as if it were altogether secondary in importance; neither need we care to inquire too minutely whether the anatomical lesion is an hyperæmia, a papule, a vesicle, a discharge or a state of desquamation. And if we be in want of a name to include the cases of this description, we might adopt the word assimilation, and consider this an *assimilative group* of diseases.

These were some of the last words of one of England's best known modern dermatologists.

In addition to what has been said in a previous communication,* there is no doubt that the large consumption of nitrogenized foods, such as lean meat, eggs, etc., are conducive to derangements of the skin in common with

* 'Diseases of the Skin Occurring in the Subjects of Gout, Jour. Cut. and Genito-Urinary Diseases.' By the writer. 1886.

other excretory organs. Beer, too, often has a deleterious effect, as seen in the following cases:

Case I. L. H., butcher, aged fifty-four complained of swelling of the face and arms, with a red, slightly moist eruption, which was very itchy. He was seen in consultation with Dr. Hausheer in December, 1887.

His previous health had been good, excepting a similar attack a year or two previously.

He was in the habit of eating plentifully of meat and of taking copious draughts of beer in the evening.

At the time of examination he presented a robust appearance, with a dilatation of the superficial blood vessels of the face. He had a moist eruption on the upper half of the body, with marked œdema as before mentioned. He perspired freely at night, and emitted a distinct urinous odor from the skin. The urine was normal in quantity, of amber color, sp. g. 1028, acid, with a copious deposit of urates.

The treatment adopted was as follows:—Diet restricted to light, non-nitrogenized substances, as gruel, dry toast and milk; hot water taken freely an hour before meals, and pilulae hydrargyri, followed by saline cathartics. This was supplanted by acetate of potassium with diluents, which in turn were followed by vegetable bitters. The external management consisted of warm alkaline baths, the lotio evaporans of Hutchinson,* and finally the glycerole of tannin.

The patient made a good recovery twenty-one days afterward.

Case II. W. H., dentist, aged thirty-five, of unsettled, nervous temperament, sought advice for a moist, itchy eruption on the upper part of the chest and neck; he never had been afflicted before in a similar way. To in-

*℞. Spts. rectificati. ʒii.
Liq. Plumbi. ʒiss.
Aquam ad. ʒvi. M.

crease his weight, he had followed a system of generous diet, with a free supply of beer at night.

At the time of examination the urine was normal, but the bowels were constipated.

He was given a light diet, ordered to discontinue beer, and was advised to drink Hunyada water before meals. He was under observation ten days and ended in recovery.

These cases would come under the general title of eczema. But do not understand me to say eczema is always the result of malassimilation or defective disassimilation; on the contrary, its causes are diverse, and their name is legion. Thus, eczema occurring in the neurosthenic from derangements of digestion often assumes the character of a reflex neurosis, as in the following:

Case III. Mrs. J. V., aged forty-two, complained of an eruption on the face and hands, which was very itchy.

The family history shows that her mother had an eruption on the face, which was called "erysipelas;" she also had asthma, from which she died. The patient has two sisters, one of whom has a similar eruption and the other suffers from neuralgia.

Her previous condition has not been good, and since 1883 has had recurrent attacks of the eruption every spring. Her present condition is markedly neurosthenic and her emotions are sometimes beyond her control. While detailing her symptoms, she broke down with a fit of crying, and a few minutes after her spirits were as light as a miss of twenty.

The eruption is bright red and slightly scaly; distributed around the mouth and parts adjacent, less marked on the dorsal surface of the hands. She has constipation alternating with diarrhœa. She says strawberries and tomatoes act like poison to the eruption.

With this state of affairs it seemed an excellent opportunity to test the effect of certain articles of diet. Ac-

cordingly she was restricted to oatmeal and milk—not on the theory of *similia similibus curantur*, for I believe oatmeal to be a most wholesome food in diseases of the skin. The same may be said of buckwheat flour.

In addition to the diet she was given the lead wash, and a pill containing one-eighth grain each of calomel and ipecac after meals. At the end of four days she was much better and the fiery redness had disappeared. Strawberries were now added to the diet list, when the following observations were made:

Half an hour after eating she complained of an uncomfortable sensation in the stomach, which soon passed away; two hours after eating, the affected parts of the skin began to tingle and itch, without any appreciable change in appearance.

After the second meal the same symptoms were complained of, and three hours after eating, the skin became inflamed with marked discomfort. It was found necessary to discontinue further investigations, but the patient assured me that tomatoes acted in the same way.

Case IV. J. G., drayman, aged forty-four, complained of an acute eczema of the face and neck. He had previously had asthma.

He was doing well under a soothing course of treatment similar to the preceding, and seemed in a fair way to end in recovery, when his wife yielded to his craving for raw onions, of which he ate freely.

The next day the face and neck were acutely inflamed and the itching was greatly aggravated. This yielded to treatment as before. The case was also seen by Dr. G. C. Ashmun, the family attendant.

There is no reasonable doubt that these articles of diet, which to most persons are wholesome, in these instances were instrumental in inducing a relapse.

Just what vital process is involved in producing a surface inflammation from certain substances acting

primarily on the gastro-intestinal tract, may be studied best from a synthetical stand-point—from observation.

He who has seen the flush of the *bon vivant* after a full meal, and has noticed, too, the ariæ involved in this glow of repletion, may more readily trace certain cutaneous derangements to their remote source. He may have more readily impressed on his mind, too, that the pathological is but a step in excess of the physiological, and that a knowledge of the latter leads to the development of etiology.

And so it is in many diseases of the skin, which we cannot associate with local irritation, diathesis, or extraneous substance seeking exit from the blood. More rational is it to affirm that they are perverted reflex manifestations of a physiological function. In place, then, of the reflex centers transmitting the vaso-motor relaxation to the mucous membrane of the stomach, a part of this influence is diverted, and appears on the surface of the body as an erythema, urticaria, acute eczema or a prurigo.

Then again there are diseases of the skin which are caused by the withdrawal of the vegetable acids; scurvy is representative of this class. In the winter and spring of 1884 there occurred a number of cases of these scorbutic eruptions of the skin and mucous membranes in the Cleveland Work-House, and in a neighboring Bohemian settlement. Through the courtesy of Drs. Sawyer and Stevenson, opportunity was given me to follow sóme of these cases. The most noteworthy symptoms were great prostration, pain and swelling of the joints of the extremities, with bullæ of various sizes filled with bloody serum. The teeth were loosened and the gums bled on the slightest provocation.

Those whom I saw subsisted almost exclusively on bread, and on supplying a mixed diet, with fresh meat and vegetables, the disease yielded without further serious consequences.

In the aged, derangements of the skin, associated with defective alimentation, have been most painfully apparent at the public services. Here we see nature, unassisted by art, sometimes grappling with a sinking vitality, sometimes keeping afloat without fuel to move the complex enginery of life, and without a guiding hand to direct its tottering course. At this epoch, too, the circle of life nears completion, the beginning and the end become blended as one, and the same obstacles arise that were encountered in infancy. Defective teeth allows solid food to pass into the stomach without having undergone the first process of digestion, and many who present themselves with an urticaria or an eczema, have these millstones of the body entirely absent.

To this special defect I wish to call attention as having escaped the careful observation which it deserves.

Case V. Mrs. A., aged fifty-five, had always enjoyed good health until eight months previously, when she was attacked with a cutaneous disturbance, which prevented sleep.

Upon examination, no definite lesions of the skin could be made out except nail marks. Dr. Phinney of Newburgh, with whom the case was seen, had observed these paroxysms, which took place between 1 and 2 A. M., and which lasted until day-break. The diagnosis was urticaria.

This hale matron had lost her teeth about a year before, and was in the habit of eating heartily of meat, vegetables, and sometimes pastry, late in the evening.

She was advised as to the nature of her discomforture and directed to a dentist; in the meantime, to eat only soft food, such as soft boiled eggs, porridge and milk. A year after this the family medical attendant told me that the urticaria became less annoying and ceased after the patient became accustomed to masticate with artificial teeth.

Case VI. Mrs. R., aged seventy-two, complained of

eczema of twelve years' duration. Previous to this she had enjoyed good health.

Her teeth began to decay at about the age of fifty, and ten years later she was compelled to have them removed. Since the eruption appeared she has been a faithful attendant at the different dispensaries, and entered my service in 1882, where she was treated without much benefit. Four years later she returned for treatment, saying the disease had become so distressing that without relief life would be unbearable. At this time I was more strongly impressed than before, that defective mastication bore an important position in the etiology of the disease. In accordance with this she was given the following diet list: Breakfast.—Black tea (very weak), milk, toast, oatmeal, cracked wheat, eggs poached or boiled (three minutes), boiled milk.

Dinner.—(At noon)—Beef broth or bean soup, broiled fresh fish, mashed potatoes (sparingly), turnips, squash, pudding, huckleberries, peaches, milk.

Supper.—Gruel, with milk, weak black tea, dipped toast with butter.

She was directed to eat lightly and slowly.

The previous line of treatment was resumed.

The result was marked; at the end of seven weeks the eruption had entirely disappeared, and she who supplied the text, as "a *typical case of eczema senilis*," to so many succeeding generations of students, and who was a living, a suffering monument to the futility of our art, now embodies a text, more potent than words, to the value of dietetics, in the well-being and management of the skin.

What, then, do these principles teach?

1. That man is an omnivorous feeder and cannot thrive on bread alone; neither can he maintain a healthy skin on an exclusive diet of meat.

2. Those having irritable skins should avoid the continued use of: *a*, In youth—rhubarb, the small seed fruits,

apples, shell-fish, sugar and acids, malt liquors and spirits; *b*, in old age—lean meat, eggs, beans, shell-fish, pastries, malt liquors and spirits.

3. That wholesome foods may become unwholesome: *a*, By improper cooking, as hot cakes, heavy puddings, etc.; *b*, by defective mastication, either by eating too rapidly, or from loss of the teeth.

143 Euclid Avenue.

THE TREATMENT OF POTT'S DISEASE.

BY H. LONGSTREET TAYLOR, A. M., M. D., CINCINNATI, OHIO.

Assistant to the Chair of Clinical Surgery and Assistant Surgeon in the Surgical Clinic of the Medical College of Ohio.

The mechanical treatment of Pott's disease of the spine has practically not advanced since Sayre first applied the plaster jacket, and at the same time connected his name almost as inseparably with this disease as that of the immortal Pott.

One question of great practical importance in this treatment is, shall the support be continuous, or may we trust to position during the night, when the jacket becomes most wearisome to the sufferer? To borrow a comparison from the younger Sayre, must the parts be kept as constantly and as carefully in splints as a fractured bone? From clinical experience and observation, I think that this is not necessary, if an exception be made of very acute cases. If a properly fitted appliance be worn during the day from just before arising to immediately after retiring, then the weight of the body is at no time transmitted through the vertebral column and the diseased part is relieved from pressure. The patient that sleeps on a hard mattress, without a pillow or with but a very small one, gains as much from this position in the night as from his mechanical support throughout the day. If the apparatus is to be taken off at night, the plaster of Paris jacket cannot be used; it must be substituted by a movable corset of steel, leather, felt, or some other material.

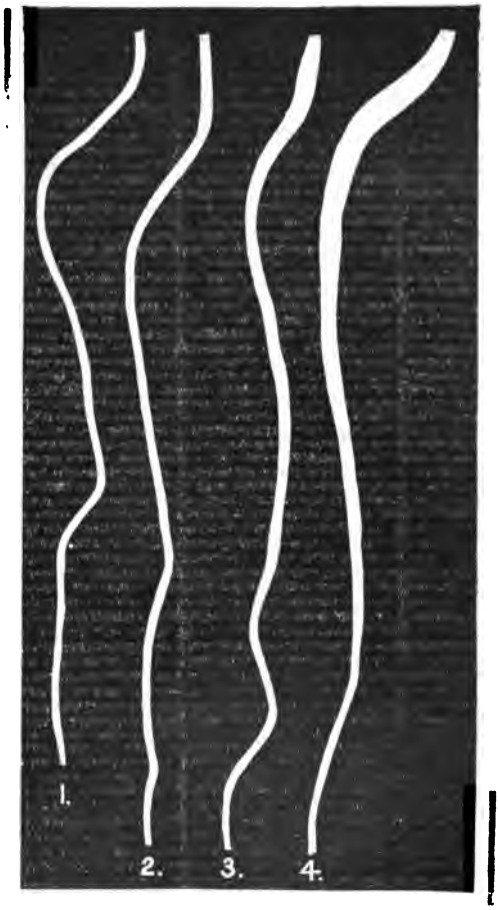
Personally, I am very well satisfied with the leather jacket. It is cheap; it can be made by the surgeon himself without the aid of the instrument-maker, or by calling on the latter to apply the finishing touches only after he has adapted it to his patient; it is light, durable, cleanly, well ventilated, and, above all, accomplishes it purpose.

A leather corset laced on tightly each morning will be found to fit more accurately than a plaster of Paris jacket. The latter is very apt to expand slightly while setting, and so from the first may not be an exact fit. The laced corset can also be adapted to changes in the body due to variations in weight.

The leather jacket is so simple that a person without the slightest idea of mechanical principles can apply it perfectly. This is not true of steel supports. To obtain the best results with these, they should be under the control of a person of some intelligence, but outside of hospitals we have to rely upon the family, and only too often they are not capable of understanding why such minute directions must be obeyed or of following them if they would.

This melancholy picture is illustrated by the history of Jimmie F. I first saw him in October, 1886. The symptoms of the disease were very marked—rigidity of the spine, local pain, deformity, unwillingness to walk, and the characteristic method of picking up small articles from the floor. The hump was about the middle of the dorsal region. There was no history of a trauma. As the mother could not be trusted to make the proper use of a movable corset, Sayre's jacket was at once applied. After this the symptoms were not so severe, but the child had fever and was restless. At the end of a month the parents, who could not see their child tortured in that way, insisted upon having the jacket taken off. But the child clamored for it now that he had learned its value, and out of sympathy for him I once more took charge of the case and fitted a leather corset. The result justified

my fears. The patient grew worse from week to week on account of bad nursing and neglect. He died from the effects of the great heat in the summer of 1887, during my



absence from the city. In a hospital the child might have been saved, but such care as he received from his mother

NOTE.—These figures are lead wire tracings of the spinal column and part of the skull. They all end at the sacrum. Figs. 1 and 2 pass above the occipital protuberance, but Figs. 3 and 4 do not. The patients were standing erect, with no support.

would have rendered any treatment nugatory. In such families Sayre's jacket is the only one that should be used under any circumstances.

With the intelligent assistance of the parents it is another matter altogether. George J., whose present condition is shown by the diagram, figure 1, was just recovering from measles when his parents noticed something wrong. When I first saw him, in March, 1887, quite a prominent hump had formed just below the seventh dorsal vertebra. He was then three and a half years old. He was at once given a leather jacket. Since that time he has had scarcely a bad symptom, and a few weeks ago walked two miles without a complaint. The vertebræ seem to be solidified, but the child will not give up his corset. It is difficult to decide when the time has come to withdraw supports. Alexander says that no spine can be considered cured until a post-mortem has been made, which sounds as though he would condemn these unfortunates to the wearing of braces and supports all their lives. While the disease is very chronic, as is caries of any of the spongy bones, yet in some cases its advance finally ceases, and after the lapse of time nothing remains as evidence of its former presence except the destruction that it has wrought.

This patient has had no fever, no cough, has not lost flesh. There is apparent anchylosis, and yet he refuses to go without his support. The difficulty is, however, not always met with. Harry D., a boy of about the same age, a tracing of whose back is shown in figure 2, wore his jacket for fifteen months; he had had symptoms for nine months before I saw him, but not the slightest difficulty was experienced in taking away his support. His case is of interest, because a second kyphosis developed in the lumbar region. There was no history of a trauma. He is now suffering with general tuberculosis.

In Fred. H.'s case, however, figure 3, a trauma seems

to have been the starting-point. He was hurt in the back during an encounter with a goat, and from that time he complained. Before many weeks passed, the surgeon who was called applied Sayre's jacket. The family compelled him to remove it in a few weeks and he gave up the case. One year after the accident I was called and made a leather jacket for him. The hump was at the junction of the dorsal and lumbar vertebræ. He soon began to run about and play, which he had not done for a long time. He wore the jacket fourteen months, when it was taken off. The hump is more prominent than it was, but this is due in great measure to the sharp compensatory curves in its immediate proximity.

A very interesting case is that of Gus. D., figure 4, now fourteen years old. When he was eleven years old, he began to complain of obscure pains; would not play with other boys, and was very restless at night. An examination revealed rigidity of the spine, while any attempt to extend the partly flexed right thigh caused pain. The boy leaned to that side when he was obliged to move around, and held the thigh as quiet as possible at all times. There was also a fluctuating tumor as large as a walnut just above the crest of the ilium at the outer edge of the quadratus lumborum muscle. This was aspirated and about an ounce of thick pus drawn off. There was tenderness to pressure over the lower dorsal vertebræ, and while the jacket was being made the spine of the eleventh dorsal vertebra began to grow prominent.

The jacket was applied and rest ordered, while extension was made by means of the weight and pulley to the right leg. This was discontinued after three weeks, as the irritability and sensibility of the pseas had disappeared. The jacket was worn six months, and to-day a slightly exaggerated lumbar curve is all that can be seen. The boy is strong and active.

Many surgeons condemn any interference with abscesses connected with Pott's disease, but whether this objection is founded upon improper methods of operating and after treatment, or upon good and sufficient surgical principles, is very doubtful. It is argued that these abscesses frequently undergo spontaneous absorption, but with Mr. Edmund Owen and others, I think that this probability is very small, and that a statistical study of a large number of carefully observed cases would probably alter the opinion of the profession upon this point. Mr. Owen says, "In my own experience this happy contingency (spontaneous absorption) has been so rare that I do not regard it as within the range of practical therapeutics."

Disastrous results have followed puncture in the neighborhood of Poupart's ligament and will continue to do so, because the opening is made at the end of a long, sinuous tract, with numerous pouches, in which the retention and fermentation of the discharges must occur, and which the most careful disinfection and drainage, from the groin alone, cannot reach. It has been proposed, in order to overcome these difficulties and to rescue the patient from the dangers of a tedious and extensive suppuration, to make a counter opening at the opposite end of the abscess, and by free irrigation throughout its length, hasten its obliteration. A number of surgeons have followed this practice and their success has certainly been most gratifying. It is unnecessary to recite the cases to this society, but the names of such surgeons as Kœnig, Wood, Israel, Treves, Dollinger and others must certainly command attention.

This was the first step in advance from the expectant plan, and it opened the way for the second one, the local treatment of the diseased vertebræ themselves. In 1882 Israel opened a large abscess in the lumbar region. Exploring its walls with his finger, he felt that the twelfth rib was carious to a considerable extent, which part he at

once resected. The finger now passed on readily to the body of the twelfth dorsal vertebra, in which a large sequestrum was found and also removed. In loosening it the membranes of the cord were exposed and a collection of pus evacuated, that had been compressing the cord. The sequestrum consisted of at least half of the body of the vertebra. From that time the patient was relieved of pain. He died of empyema some weeks later, when the abscess cavity was found much shrunken, and healthy granulations occupied the site of the sequestrum.

In 1884 Treves reported to the Royal Medical and Chirurgical Society of London three cases, in which he had examined through a lumbar incision the bodies of the lowest dorsal and the lumbar vertebræ. In one case he had removed a large sequestrum, one inch by one-half an inch, and the patient's recovery was rapid and complete. In another he removed necrotic sand and detritus, but had the satisfaction, upon making an examination after death from general tuberculosis some months later, of finding the previously denuded bone covered and the abscess nearly closed. A third case was simply exploratory, at the seat of an old lumbar kyphosis, where, however, nothing was found. The patient recovered.

This is certainly scientific surgery. It is but the same proceeding that has been so successful in analogous conditions in other situations, where no one would now, for a moment, call its propriety into question, and where the expectant plan of treatment amounts almost to criminal carelessness.

We are told that the destruction of bone in this situation is of such an essentially slow and chronic nature that it should not be interfered with; but is this statement not an argument for local interference? Of whatsoever variety the caries in the vertebræ may be, whether due to a localized tuberculosis, the effect of a trauma, or the result of pyæmic embolus, the process of healing can be greatly

shortened, or brought about in cases in which it would otherwise never occur, by an application of the sharp spoon, followed by a thorough disinfection of the diseased cavity and the surrounding tissues.

Drs. Thos. J. Morton and Wm. Hunt, editors of the article on "Orthopædic Surgery" in the 'Annual of the Universal Medical Sciences' just published, say, "Pott's idea of treatment was based upon attacking the disease *in situ*. Who knows but what in these days of antiseptic surgery we may practically return to his methods in a much bolder way? Such treatment would be positive and based upon sound pathology, while the most that can be said of the present method of treatment, in all its varieties, is that it is expectant.

In order to reach the bodies of the lumbar vertebræ and the last dorsal, an incision is made at the outer edge of the erector spinal mass. Some of the fibres of the latissimus dorsi muscle must be divided, and also the superficial layer of the dorsal fasciæ. This opens the fascial sheath around the erector spinal mass, which can be readily drawn toward the median line, when the posterior part of the sheath, the middle layer of the lumbar fasciæ, is opened near the tips of the transverse processes of the vertebræ. If a large abscess is present, it will now present; if not, a short dissection with the scalpel handle along the transverse process leads to the body of the vertebra, which can be examined with the finger.

The results of the few operations that have been made are the best testimonials of its worth.

I have long thought that this operation should not be limited to the lower end of the column, where its advocates confine it. Recently I have made quite a number of dissections, in order to see whether the bodies of the dorsal vertebræ may not be accessible to the surgeon by a short and safe dissection. After finishing my investigations, I found that Dr. Thomas Laffan had suggested to

the Royal Academy of Medicine of Ireland, at its meeting last January, that this operation should be extended to all of the dorsal vertebræ, and he deserves the credit of being the first to propose this extensive application of local surgical treatment.

My conclusions from the dissections that I have made, on both adult and infant subjects, are, that the bodies of the dorsal vertebræ are accessible to the surgeon, and that there is but little danger of opening the pleural cavity.

The best method is to make an incision about three inches long, just external to the transverse processes of the vertebræ and down to the ribs. In the dorsal region the erector spinal mass cannot be retracted as readily as in the lumbar region, as the serrations of the different muscles inserted into the ribs render this impossible. Therefore an incision through the muscles in the direction of their fibres is better than retracting, since to do this these insertions must be divided. Subperiosteal resection of from half to three-quarters of an inch from the ribs in the center of the incision is the second step. One end of the resected piece should be as near to the articulation of the rib with the transverse process as possible. The third step is the dissection of the parietal pleura from the head of the rib and side of the vertebra or vertebræ to be examined. This has always been easily done with a blunt instrument, and invariably without opening the pleural cavity. In several young subjects I could readily pass the tip of the finger to the opposite side of the vertebra, and could examine the anterior surfaces of four vertebræ from one opening.

It is readily understood that when an abscess cavity exists, this subpleural dissection would be very short, and the danger of opening the pleural cavity reduced to a minimum, by the fact that it will have been obliterated by adhesive inflammation in the vast majority of cases.

Having explored the seat of the disease, the bone can be scraped and gouged with small spoons, set at different angles to their handles; sequestra can be extracted, which, by pressure upon the cord, or by the retention of the products of suppuration, may be the cause of paraplegia; the pyogenic membrane can be destroyed and removed; the cavity can be thoroughly disinfected and drained, and the healing powers of the patient given an opportunity to assert themselves.

This operation should undoubtedly be restricted to cases in which all the symptoms point to an abscess. Whether it may not become the routine practice in every case as soon as the diagnosis has been made, cannot be predicted until its value has been determined by clinical experience. Should this future be in store for it, the prevention of deformity, due to a great destruction of bone, the shortening of the time required by the present expectant plan of treatment to weeks, instead of months or years, and a great reduction of the danger of constitutional infection in tubercular cases, are among the brilliant possibilities of the local treatment of Pott's disease.

A RARE CASE OF ORBITAL TUMOR.

BY J. W. WRIGHT, M. D., COLUMBUS, OHIO.

G. J., male, age two years; mother healthy; father of scrofulous habit and afflicted with articular rheumatism.

January 9, 1888, I was consulted in reference to the child's eye, with the following history:

Six weeks ago it was noticed that there was some prominence of his left eye, and that he made occasional demonstrations indicating that he was suffering pain in the region of the eye.

It was now plainly noticeable that the eye was becoming more prominent from day to day, and in four weeks from the time it was first noticed, the eye protruded to an enormous extent.

From this time the little patient suffered severe and incessant pain.

He would not allow anyone to touch the eye or adjacent parts, slept only short naps, lying on his face, and was losing health and strength rapidly.

When the child was brought to me the eye was so much projected forward that the lids would not cover the ball, the entire cornea being exposed and showed evidence of sloughing.

I made an examination under chloroform, and thought I could detect fluctuation behind the upper edge of the orbit. I also detected a lump, which could be plainly felt upon the least pressure, within the inner and upper angle of the orbit. Other physicians who were present and

examined the case were of my opinion with regard to the swelling as well as to the fluctuation.

I came to the conclusion that there was an abscess of the cellular tissue within the orbit, although there was no marked œdema of the lids—one of the principal characteristics of inflammation of this structure.

Accordingly, on the morning of January 10, with the assistance of Dr. A. E. Evans of this city, I made an incision under the upper lid, running the knife far back into the swelling, which appeared at the inner angle of the orbit.

I was astonished to find but a small quantity of blood escape from this procedure.

The lids and conjunctiva immediately became very much swollen from the extravasation of blood into these parts. The ocular conjunctiva, which before this step presented an almost natural appearance, became greatly chemosed, and protruded to a large extent between the lids.

The next day, with the assistance of Dr. Baldwin, I made another examination. The swelling was again outlined, and we detected the sensation of fluctuation. We dissected the conjunctival tissues from the sclerotic, and again made deep incisions into the orbital mass, supposing that in the former operation I had missed the pus cavity. As before, we obtained nothing but a small quantity of blood.

I now thought that I had incised the inflamed cellular tissue before the pus had formed, and accordingly applied warm cataplasms of linseed meal to the affected eye, which appeared to give considerable relief to the patient's suffering.

On the morning of January 14, finding that the cornea was opaque and sloughing, I called to my assistance Dr. Baldwin, when we removed the eye. We found the orbit filled to two-thirds of its capacity with a tumor, which we at once removed.

The tumor consisted of two large lobes and one small one. The largest lobe was attached to the roof of the orbit; the other two were attached partly to the roof and partly to the floor of the orbit. The entire mass weighed about one ounce. The optic nerve did not seem to be involved.

The tumor is of a soft, fatty consistence and very elastic, which doubtless gave the sensation of fluctuation. It very much resembles that class of tumors known as *lipoma*.

The child recovered so rapidly that in a few days it was taken home. The wound soon healed, and in three weeks after the operation it appeared to have fully recovered its former vigor. About this time it was taken with the measles, with which it was indisposed for about one week.

Upon recovering from the attack of measles it was discovered that a tumor was again making its appearance in the orbit. It grew so rapidly that by the ninth of March, when I again saw the child, it had filled the orbital cavity and protruded considerably between the lids.

With the assistance of Dr. Yeo, the family's physician, I again removed the growth, but not so thoroughly as I desired, owing to the child not standing the chloroform well, and also a lack of assistance which was necessary to make that thorough cleaning out of the orbit which we now realized was so necessary. I felt that the orbital cavity should be *thoroughly shorn*, as it were, of everything.

In about a week I received a letter stating that the tumor was again growing rapidly, and in another week the orbital cavity was again filled.

At the earnest solicitation of its parents I again saw the child on the fifth of April, with Dr. Wall of Cambridge, Ohio. The orbital cavity was again filled and the growth protruded between the lids to a great extent. The cer-

vical glands were enlarged, and at the angle of the left jaw appeared a lump resembling an enchondroma.

The child had not, apparently, lost much strength, but during the past two weeks it had been very fretful, and the last three days it had been somewhat drowsy, although no anodynes or other medicines had been given it.

This last condition we looked upon as unfavorable, and we feared that the inflammatory action had extended to the brain, or else the tumor, on account of its enormous size, was making pressure upon the brain through the orbital walls.

We concluded, as a last expedient, to again remove the tumor and to make as thorough cleaning of the orbital cavity as possible.

Accordingly, on April 7, with Drs. Wall and Warne of Cambridge, we removed every vestige of the orbital growth. The child promptly came out from the effects of the anæsthetic. It appeared bright and relieved for a few hours, but afterward it became dull, and finally, at the end of twenty-four hours, had a convulsion and died.

A microscopic examination of the first tumor discloses a sarcoma, and of the other a glio-sarcoma.

This difference can be accounted for from the fact that in the first the optic nerve was not involved. In the other tumor the examination shows that either the optic nerve or brain was involved with the cellular tissue.

It is unfortunate that a post-mortem was not admissible, as it would be interesting to know in what manner the brain had become affected—if the fungus growth had extended inward and reached the brain through the dura-mater, or if the inflammatory action was transmitted through the optic tract by extension of the disease or as a result of the operation.

An interesting feature in this case is that a cousin of this child, on the father's side, of the same age, died of a similar affection a few years ago.

It has been generally conceded that cancer is not hereditary; but heredity is a puzzle, as defects are not inclined to go in a straight line; for instance, "the children of deaf-mutes are not apt to be deaf-mutes, but the cousins of those children may be deaf-mutes, showing, it is said, that some remote ancestor had some mental or physical defect which has been transmitted to his posterity, although not *always* in the form in which he was afflicted."

133 EAST SPRING STREET.

THE IMPORTANCE OF THE EARLY RECOGNITION OF GLAUCOMA.

BY HARLAN P. ALLEN, M. D., COLUMBUS, OHIO,

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The incurable blindness resulting from unrecognized and, therefore, improperly treated glaucoma is an old and sad story to all oculists, but this paper is not written for oculists, but for general practitioners. It may occur to you, gentlemen, that this is also an old and oft-repeated story to you. I believe this to be true, and there must be some good reason for such frequent repetition. Glaucoma comprises about one per cent. of all eye diseases, and is probably met with more or less frequently by every practitioner. I wish to impress upon your minds three facts in regard to glaucoma: First, it can be easily recognized; second, it can, usually, be easily treated; third, if either let alone or treated improperly, the result is always incurable blindness. I have also a conviction which I believe to be a fact, namely, that the general practitioner almost always fails to recognize this disease. If this be true, and if you accept my previous statements, the conclusion cannot be avoided that hundreds, yes thousands, of people become blind every year through the carelessness of their family physician. These are harsh words, but I believe it to be for the good of the profession that they be spoken. It is my impression that it is the knowledge of these facts and the presence of this conviction in the minds of oculists which has resulted in so many papers on this subject being

read before societies and printed in medical literature. I will ask any older member of this meeting if he cannot recall a case in his practice where something like this has been the accepted story: A few days or weeks of intense frontal, temporal or orbital neuralgia, with some injection of the eyeball, resulting, strange to say, in blindness; a supposed neuralgia or iritis so intense as to destroy the sight; a most unaccountable and unfortunate case—a most surprising affliction from Divine Providence. Gentlemen, I will be so bold as to diagnosticate that case for you. That was glaucoma—relentless, terrible, but curable glaucoma. Had you put your finger upon that eyeball, you would have found it hard; had you tested the visual field, you would have found it contracted; had you instilled a solution of sulphate of eserine, you would have given your patient infinite comfort and relief from pain, probably checked the disease. What I fear you did do was to instill atropia and so add fuel to the flame. Atropia is at once the good and evil genius of ophthalmology. It is in its proper sphere invaluable, but when used in glaucoma its influence is fatal, since its effect on intra-ocular tension is undisputed. I say glaucoma is easily recognized. I shall not devote any part of the valuable time of this Society to the discussion of the differential diagnosis of glaucoma, but I wish to enumerate the three typical signs of this disease, namely:

First. Increased tension of the eyeball.

Second. Contraction of the visual field with diminishing visual acuity.

Third. Excavation of the optic disc.

The two former can be recognized without any complicated apparatus other than the one which nature has furnished to each of us, *i. e.*, the human hand, and these two signs are amply sufficient for diagnosis. I am speaking, of course, of the type which always admits of variations. If you palpate with the forefinger of each hand a

glaucomatous eyeball through the closed lid while the patient looks downward, you will easily detect the unnatural hardness of the organ. This hardness is in itself glaucoma. Upon this abnormal condition alone depends all of the other manifestations—the pain, limited field, poor sight, circumcorneal injection, enlarged pupil, shallow anterior chamber, etc. The contracted field is recognized by noting the point at which the patient detects the presence of the hand when approached in a plane at right angles to the visual line from above, below, outer side and inner side, and comparing this with your own field, which is tested at the same moment as you sit facing your patient with your hand equidistant from each of you. Asking you to bear in mind that sometimes glaucoma manifests itself without marked inflammatory signs (the so-called glaucoma simplex, which is equally fatal to sight), and that increased tension (whatever may be its pathology) is the essence of the disease, I shall enumerate briefly a few cases from my record book, asking you to note especially the result in each case when recognized and properly treated at once, and compare this with the result in the other cases, which were not recognized until the eye was lost. I select this particular group of cases, because they are typical of acute inflammatory glaucoma, which is the common form, and because they occurred in intelligent people who mostly sought medical advice at once.

Case I. Mr. F., aged thirty-four, American. First seen February 6, 1885; *right eye* sightless from glaucoma, which was not treated, fifteen years ago. Terrible frontal and temporal pain on left side. Has not slept much for a week. Completely unnerved. Tension of *left eye* increased. All the usual symptoms of glaucoma. Began one week before. Had in the meantime been under the treatment of a quack oculist in this city, who had diagnosticated conjunctivitis and treated accordingly.

I ordered instillations of a one per cent. aqueous solution of sulphate of eserine every three hours. I saw him in the morning. That night, after four instillations, he went to bed and slept eighteen hours continuously, with, of course, complete relief from pain. In three days the tension was normal. In twelve days the eye was normal. In about three weeks he stopped treatment with vision perfect. He had had no return of the trouble when I last heard from him about one year ago. In the light of history I can certainly say this patient would now be hopelessly blind in both eyes had his trouble not been recognized when it was. As it is, he is a useful and independent member of society.

Case II. Mrs. G., thirty-six, American. First seen October 17, 1883; began to have pain in temple and frontal region several months before. Had been under treatment all summer with two physicians and had grown steadily worse. Had tertiary syphilis. When I first saw her, her vision was only perception of light in *each eye*, and she had to be led about. Tension increased. Under eserine locally and iodide of potassium internally, her sight improved in the right eye to counting of fingers at fifteen feet. This, considering the chronicity of the case and poor sight, was more than I had expected, but she had steadily objected to any operation. After two weeks' treatment, I was compelled to leave the city temporarily, and she passed into the hands of another oculist, who later performed iridectomy and gave her a reasonable degree of vision. She was, no doubt, saved from absolute blindness by the eserine and later by the iridectomy.

Case III. Mr. B., age thirty, American. First seen March 3 of the present year, at 10 P. M. *Left eye* suffering from a severe acute glaucoma; tension increased; intense pain; circumcorneal injection; sight diminished. Patient had a congenital cataract in that eye, which, however, had nothing to do with the development of his

glaucoma. Field contracted in inner portion. The intense pain began six hours before I saw him. Four hours before he visited me he had consulted his family physician, who had recommended a solution of sulphate of atropia. This he had used and his pupil was widely dilated. I gave him antifebrin in ten grain doses, but he passed a terrible night without rest or sleep. The next morning I began the instillation of eserine solution every two hours. The following night he had complete relief from pain and slept thirteen hours continuously. On the second day tension was normal; pain had ceased. The eserine was gradually diminished and on the eleventh day stopped entirely, the eye being normal. On the twenty-eighth day the eye showed no return of the glaucoma. This patient would by this time, considering the severity of the onset, have been nearly or entirely blind in that eye, and would have had weeks of almost unbearable pain.

Thus far we have looked at the bright side of the picture, but there is, unfortunately, a dark side as well, and I wish to present three other cases on this side. I am sure that every oculist will be able to furnish many such cases from his experience.

Case IV. Mrs. H., age fifty, American. First seen March 4 of the present year. *Right eye* normal. *Left eye:* Vision two two-hundredths, *i. e.*, counted fingers at two feet. Tension increased; pupil dilated; anterior chamber shallow; visual field very much narrowed; circumcorneal injection; optic disc excavated. Two months before had intense frontal and temporal pain for a few days and sight rapidly failed, and had so remained up to the time I saw her. Was seen by her family physician shortly after the trouble began, who prescribed atropia locally and tonics and iodide of potassium internally, diagnosticating the case as iritis. Practically the same

treatment was continued for two months. When I saw her, solution of eserine was ordered twice daily. After three weeks the pain and symptoms of inflammation had considerably diminished, but there has been up to the present time no improvement in vision. The prognosis for that eye is absolutely bad, and it is probable that an iridectomy will be required to relieve the pain and quiet the eye. It is reasonable to suppose that with the proper treatment at first she would now have perfect sight. All the damage was done in the first few days.

Case V. Mrs. B., age forty-seven, colored. First seen March 15 of the present year. Found her suffering from glaucoma of the *left eye*, with only perception of light. Began with severe pain two months before and sight had gradually failed since. Had been treated with atropia and told that she had a cataract, and that she might as well wait until it was ripe before consulting an oculist, as he could do nothing for her until that important time had arrived. When she became entirely blind she thought the cataract must be "ripe," and consulted me prepared to enter the hospital and have her sight restored. The prognosis is, of course, absolutely bad.

Case VI. Mrs. B., age fifty-five, German. First seen March 30 of present year. This is the saddest case of all. Lost her *left eye* in infancy from cerebro-spinal meningitis. Her *right eye*, three months before I saw her, was perfectly good, and she could "thread the finest needle and read the finest print," as she expressed it. About New Year's she began to have severe temporal and frontal pain; her eyeball became red and her sight gradually failed until, after ten weeks, she was absolutely blind and has so remained. I found her with the typical signs of glaucoma—eyeball hard, pupil dilated, etc. Her family physician had treated her since the trouble began with some local application, the composition of which I do not know. I only know that it was not eserine. As she was then

and is to-day so she will remain through life, blind and entirely dependent upon the charity of others for sustenance. We have every reasonable assurance that her condition was entirely avoidable.

Do you ask me to point the moral? It is not far to seek. Until 1856 glaucoma was ranked among the terrible afflictions of mankind with which medical art was unable to cope. In that year the genius of a von Gräfe applied the operation of iridectomy to this disease and made his name undying. One of von Gräfe's contemporaries uttered the following sentiment, which is echoed in every civilized country: "Had he done nothing else, that one act would place upon his head the crown of immortality and rank him among the small band of heroes who are the benefactors not of any one people, but of all mankind." Iridectomy is to-day the best remedy for glaucoma, but iridectomy is out of the line of operations for most general practitioners of medicine, and it is into their hands that these cases, at least in the country, usually first come. It is just in this first stage, the stage of incipiency, that so much depends upon correct diagnosis and treatment. In eserine and pilocarpine we have remedies of great value in this first stage—remedies easy to obtain, easy of application, usually eminently satisfactory in their results. If you ask me how they cure or check this disease, I must say that we do not know—we have only theories to offer; but the result we do know. They reduce tension, and increased tension is, as I have said, the essence of glaucoma.

Pardon me, gentlemen, if I insist strongly upon two points:

First. Do not mistake glaucoma for neuralgia, iritis, cataract, or acute conjunctivitis. The mistake is always a fatal one.

Second. When in doubt use eserine. You can do infinitely more harm in glaucoma with atropia than you can in any other disease with eserine.

THE TREATMENT OF ACNE.

BY B. MERRILL RICKETTS, M. D., CINCINNATI, OHIO.

MR. PRESIDENT AND GENTLEMEN :—My object in coming before you to-day is to present a subject for consideration which, I fear, has been neglected in the extreme by you, as by practitioners in general.

I do not know that we have a cutaneous disease of such supposed chronicity which is more amenable to both surgical and medicinal treatment than acne. Surely there are none more worthy of our consideration when we know that it is not a respecter of persons. It may maim and disfigure the most beautiful face, thereby making the victim an object of sympathy.

Who of you have not listened to the pleadings of a young boy or girl, or a mother for her son or daughter, to have the disease checked in its course? Since it is so often found on the face, beauty consequently being at stake, it is natural that it is a much dreaded disease, and persistent efforts made to cure it. There are few if any diseases whose nosology begins earlier or that are so equally distributed over the intervening period than acne. It was Cilsus, during the first century, A. D., who made first mention of it. Galen also speaks of it, 150 A. D., about a century later. Among others, we find Actius, 500–600 A. D.; Avicenna, 1037 A. D.; Johannes Actuarius, in the thirteenth century; Gio di Vigo, 1525 A. D.; Paracelsus, 1573 A. D., and Linneas, 1763 A. D.

The gentlemen have written very discouragingly as to

any successful course of treatment. This, perhaps, has been due to their inability to recognize the cause. Even now, we are many times at a loss as to the exact cause, but with the unlimited resources we now have as to treatment, together with our knowledge of pathology and the cause of disease, we are better able to render beneficial services in these cases than ever before.

I did not come here to discuss the pathology of acne, for you can readily get that. Neither do I come to report a list of cases, for you have all had them; but I do come to enter into an active discussion upon the subject, and to tell you the results of my own experience in the treatment of this special trouble, at the same time to give you that which I have gleaned from the writings of other members of my profession. The time of this Society would not be profitably spent if I were to enter into detail, bringing about the different varieties of the disease and treatment in this connection. However, that we may talk intelligently and understandingly upon the subject, and that we may bring out prominently the three or four great underlying principles which govern the successful termination of the disease, it will be necessary to abandon a voluminous classification and adopt one more simple: 1. Acne due to faulty secretion or excretion of sebaceous matter. 2. Acne due to congestion and inflammation of sebaceous gland, with involvement of the surrounding tissue.

In the first class we find frequently that mechanical cause is the main factor, as the closing or partial closing of the ducts by foreign matter, or by some nervous influence, which cause them to be lessened in calibre, thereby not allowing the free exit of glandular secretion. This is the case in the two forms of "acne punctata."

In one of these two forms (acne punctata nigracomedo) we find the mass composed of sebaceous and foreign matter; the deepest portion of the mass is much larger

than the superficial portion. In the other (acne punctata albada-milium) the mass is purely sebaceous, and perfectly enclosed within a sac, the mouth of the duct having been entirely obliterated. Here we have a deposit of white, cheesy matter just beneath the cuticle, which, when cut, escapes in a somewhat hardened form.

This is the simplest and most easily managed of any form of the disease. However, in either of the two varieties (comedo or milium) the sebaceous matter should be removed with as little injury to the surrounding parts as possible.

The easiest and most harmless way of extracting the comedoes is by pressure between the two index fingers, over which is tightly stretched some thin, soft fabric. Steady pressure is made with great care, so that the finger will not slip, thereby removing the cuticle and causing an injury which may require several days to repair itself.

The masses serve as foreign bodies, and, if allowed to remain, will sooner or later cause irritation, followed by congestion, inflammation, and the subsequent formation of pus.

Just as often as the sac is emptied it will each time become smaller and smaller, and have more uniform calibre. The inflamed condition is not as likely to take place with the milium as the comedo, and will not require treatment other than that of the knife, which will give free exit, the same duct seldom filling up more than once.

The local treatment of the comedo form is quite different, as something else is required besides free exit. It will be found necessary to apply some stimulating lotion or paste, such as naphthol and sulphur in combination with green soap. This form of paste I have found to answer the purpose better than any other that I have used, in that by the application of towels saturated in hot water, the cuticle will exfoliate freely, leaving the ducts freely

open and the contents to escape spontaneously for at least a few hours.

I will not consider the other form due to faulty secretion or excretion of sebaceous matter, known as acne sebaceo, or seborrhœa, as that is other than what I intended to deal with upon this occasion; therefore, I shall now take up the two varieties of the second class, known as *acne indurata* and *acne simplex*. These are the most troublesome to treat, and the results arising (if they are left to run their course) are much more serious than are the results of the first class, for many times there is marked permanent disfigurement, especially when the disease has been extensive upon the face.

There is a class of cases found among both boys and girls from fourteen to twenty years of age which are exceedingly obstinate, tubercular predisposition seeming to predominate. In fact, many of them succumb to tuberculosis before the age of twenty-five. Such cases, as a rule, are greatly benefited by the use of iodide of arsenic and potassium, together with a generous diet of the most digestible food and fresh air. Any indigestion or derangement of the alimentary tract seems to aggravate or excite acne in this class of cases more than any other; while, on the other hand, those having no tubercular history are not so susceptible to these changes, and are more difficult to manage, the treatment being altogether different in the two classes. In the latter the ingestion of certain kinds of food, as beets, radishes or pork, the use of tea, coffee, alcoholic or malt stimulants to excess, will produce it. The majority of cases, I think, are either due to or excited by the use of improper food and to neglect of diet.

Then, again, there are many cases which seem to be due to some nervous derangement produced by causes other than indigestion, but are not understood. These, I might say, are the most obstinate to treat, seeming at all times to resist all kinds of treatment.

In all cases, whether a cause can be assigned or not, the pus in each individual acne should be given free exit with a small knife, such as is used in cataract operations. A spray of rhigolene for a few minutes, say two or three, will anæsthetize the skin to such an extent that the operation will be painless.

Immediately after these pus cups are opened, the hot water should be applied in the manner before stated.

I have found nothing so serviceable in either of the two forms as arsenious acid in the form of the Asiatic pill, having given as much as one-half grain daily for this disease. When given in combination with kali iod. for two or three weeks, the disease seems to be aggravated, and the patient feels very much discouraged, thinking that the remedy will have no effect except to increase the severity of the symptoms. This, however, is not the case, as the pustules become fewer, less elevated and congested after a ten days' or ten weeks' treatment. This course, however, will avail nothing unless the patient abstains from the use of all stimulants and indigestible food.

When the disease has assumed the indurated form, and is situated upon the back, it will be necessary to put the point of the knife deep into the tissue, as the skin is so much thicker in this locality than upon the face; however, in many cases of the face, the sac of pus will lie beneath the integument in the subcellular tissue—especially is this so when the induration is extensive, or when two pockets have connected or are inclined to do so. When this state of affairs exists, the centre of the induration will be found in quite a number of instances to be gelatinous, requiring the use of a small scoop to remove it. Here is when the use of cocaine is indicated, and, if properly used subcutaneously, will permit of painless surgical interference.

It is surprising to know how little disfigurement follows such an operation. Like all wounds of the face, repair is

rapid. It is these painful procedures that enable the attendant to see his patient frequently, thus bringing about speedy recovery.

Frequent and free incisions, followed by the application of water as hot as can be borne, will do more towards leading these cases to a favorable termination than any other procedure. That the incision should be made early and frequently, is shown in those neglected cases where pus has burrowed, requiring two or more incisions to liberate the whole contents of the sac. Pus can always be found where there is induration, accompanied by redness and tenderness. The amount may not exceed three or four drops, but when removed will give instant relief from the sharp pain produced by the pressure of the pus upon the peripheral nerves supplying the integument. Incision seems to answer the purposes, viz.: to give exit to the pus and to relieve congestion.

Within the past two years I have had these patients resort to massage night and morning, kneading the skin involved with the fingers to see if a better circulation could not be had, thereby hastening the process of waste and repair and lessening induration. I think that the results have been better, and there is less tendency of a recurrence. General massage is also beneficial, and I will say a most satisfactory treatment in connection with digestible food, pure air and bright sunshine, there being but few, if any, cases that will not show an improvement at the end of four or five weeks under such conditions. This is the least likely of the two forms to return when it has once been cured.

Acne simplex is found upon the face of persons as young as ten and not over twenty years of age, but occurs later in life with males than with females. The papules or pustules are very small, are elevated and tender, and are more or less inflamed. Its course is shorter than that of acne indurata and seldom extends over a period of three

weeks, leaving no scars unless uncared for. It is sometimes very obstinate to treat, which is, no doubt, due to the inability to recognize the cause. This difficulty, along with the difficulty of differential diagnosis, is the cause of the greatest trouble.

These patients, as a rule, suffer from debility of some kind, having a poor appetite and a general listlessness. The treatment is both internal and external, and, if carried out *energetically*, will give satisfactory results. The bowels should be kept relaxed with Hauthorn, Hunyadi, or some other such water, taken upon retiring or just before breakfast.

Turkish baths, given with general massage two or three times each week, will many times be attended by good results, especially the abdominal massage, when given for constipation. Fluid ext. ergot, in half-drachm doses after each meal, is supposed to be beneficial in these cases. The cutaneous blood-vessels are contracted thereby, lessening the amount of blood, consequently lessening congestion. Tonics, such as iron, arsenic, strychnine, etc., are also serviceable. One-eighth grain of arsenious acid, given with the elixir gentian, com. tr. ferri chloridi, with a few drops of hydrochloric acid, after each meal, gradually increased until one-half or three-quarters of a grain of the arsenious acid is taken daily, is by far the best I have given.

The external treatment consists in a thorough removal of sebaceous matter after applying hot water for fifteen or twenty minutes. At the end of this time a stimulating paste of ichthyol and mollin, or lanolin, should be applied once or twice daily. Resorcin, with sub. nit. bismuth, zinc ox. and mollin or lanlolin, is also very good.

INFANT FEEDING.

BY W. S. CHRISTOPHER, M. D., CINCINNATI, O.

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It is unnecessary to invoke statistics to show that breast-fed babies thrive better, as a rule, than bottle-fed babies; that is to say that breast-fed babies gain more rapidly in weight, perform their various physiological functions more regularly and better, are less troubled with disorders of the intestinal tract and resulting consequences, particularly show less tendency to rickets and other evidences of malnutrition, and have not by far so high a mortality rate as their less fortunate brothers, the bottle-fed babies.

These facts have given rise to the widespread and generally accepted doctrine, that mother's milk is the best and only proper food for infants, and, in its absence, the best food is the one which most closely resembles it, in chemical composition and physical properties.

To dispute this doctrine is one object of this paper.

The facts already set forth, on which the doctrine is based, justify only the conclusion that breast feeding is superior to bottle feeding, as a general rule. But when we go farther and claim that, in consequence of this fact, the best artificial food for the infant is the one most closely resembling mother's milk, we have made an assumption to the effect that the superiority of breast feeding over bottle feeding is due entirely to the character of the food

administered to the child, in this ignoring the manner in which the food is supplied, and the particular conditions which may have arisen in the infant as the result of the unnatural method of feeding.

The consequence has been that the best efforts of physicians and chemists have been directed to the production of a perfect imitation of human milk, instead of to the real problem—the adaptation of food to the varying conditions of the child itself.

Milk, as it leaves the healthy mammary gland of the woman or the cow, is necessarily free from micro-organisms.

In the one case its subsequent career is such that it remains comparatively free from micro-organisms, being received directly into the mouth of the child and receiving there its only contamination, while in the other case, the milk passes through a series of vessels, and is exposed to the air, usually for a number of hours, before it is fed to the child.

Great facilities for contamination are thus presented, from the time the milk leaves the cow until it is received by the child.

It is probably true that no bottle-fed baby, in cities, at least, ever receives milk in which micro-organisms have not commenced their growth. If human milk were fed to infants under the same septic conditions that now obtain with reference to the administration of cows' milk, there can be no doubt but that its recipients would thrive as poorly as do the babies fed on cows' milk to-day.

Many of us have been in the habit of administering boiled milk to infants, because it was less liable to be followed by diarrhœa; now with a fuller information we can sterilize the milk in a more rational way by the use of the Soxhlet apparatus, or that described by Dr. Jeffries of Boston.

It is well to remember that the action of micro-organ-

isms in a nutritive fluid like milk, is very similar to that of the yeast plant in a sugar solution. That is to say, the micro-organisms in growing derive their nutrition from the surrounding substances and in so doing break up these substances into simpler ones; in other words, they establish a fermentation, or fermentations, in the medium in which they are located.

I submit that the main reason why bottle-fed babies do not thrive so well as breast-fed babies is because of the interferences with proper digestion, absorption and assimilation, in the case of the bottle babies, due to disturbances in the alimentary tract.

These disturbances may be classified as indigestion and hyperdigestion.

Indigestion, which means failure to transform into absorbable substances the food-stuffs ingested, is, I believe, much less common than is generally supposed, except in infants receiving an excess of food.

Of far greater frequency, and of much more importance, is the occurrence of hyperdigestion in infants. By hyperdigestion I mean further changes in the food than is necessary to fit it for absorption. For instance, the normal change necessary to fit starch for absorption is transformation into sugar, but when we find a further change occurring and the sugar splitting up into lactic acid, hyperdigestion has occurred.

Proteids are normally transformed into peptones, and certainly the changes are not normally carried farther than to the production of leucin and tyrosin, if so far; but when indol, skatol, and phenol, and ptomaïnes are formed in the process of their digestion, we may say that a hyperdigestion is present.

It has been satisfactorily shown by Escherich and Vignal that many micro-organisms are constantly present in the intestinal tract, and that these micro-organisms may be regarded as normal, because they not only produce no ill

effects by their presence, but certainly do assist physiological digestion. The conditions of hyperdigestion, however, are carried on by other micro-organisms, which gain entrance more or less frequently to the intestinal canal.

Building upon the products of normal digestion, they carry the fermentations which they incite to the production of harmful products. These harmful products may be considered as belonging to one of two classes: they are either local irritants, or they are ptomaïnes, which act on the central nervous system after their absorption, and produce a great variety of effects, among which may be noted dilatation and contraction of the pupils, restlessness, perhaps convulsions and coma, diarrhœa, dysenteric evacuations, constipation, and probably the suppression of urine often noted in very sick infants.

The important question now arrives, What means have we of distinguishing clinically between these various forms of fermentation?

The examination of stools soon leads one to believe that there are probably a large number of abnormal fermentations which may occur in the intestine, induced by various bacteria and maintained by different food-stuffs. By the odor we are enabled to classify these various fermentations into two fundamental divisions, viz.: those producing acid products and those producing the putrid products.

A putrid fermentation is necessarily maintained by albuminous substances, while the acid products result from the decomposition of the carbo-hydrates in the food. Thus we are enabled to distinguish clinically, by the odor alone, the abnormal fermentations maintained by the two great classes of foods, the proteids and the carbo-hydrates.

So far then as the mere selection of food goes, for an infant troubled with one or the other of these two forms of intestinal hyperdigestion—and in my experience this is

very frequent with bottle babies—we have a distinct indication to withhold the food which is producing the particular abnormal fermentation, while we permit the administration of the foods of the other class. That is, in the face of a putrid fermentation in the intestine of the child, we must withhold albuminous food, and in acid fermentations, the carbo-hydrates must be prohibited. Milk contains both a carbo-hydrate and a proteid, and is capable of maintaining both forms of fermentation. It is therefore contra-indicated in all of these cases. To meet the indications as herein set forth we must have at least two foods, a carbo-hydrate, to be used during putrid fermentations, and a proteid, to be used during acid fermentations. When the bowels are normal, both foods may be administered together and proper nutrition maintained.

Clinically we not infrequently find that acid stools one day are followed by putrid stools the next, and the reverse is also seen. Infants whose stools are odorless, and without any solid contents, and with but little color, are suffering from a condition too severe to be considered a mere disorder of digestion, and while I shall not discuss its cause or treatment here, I may mention that these cases, according to my observation, are preceded by a putrid fermentation in the bowels.

With the question of therapy in these cases, or with the sterilization of the food, I am not at present concerned, it being my object so show:

First, that the abnormal fermentations, set up by micro-organisms in the intestine of the infant, may be regarded as belonging to two general classes, viz.: acid fermentation and putrid fermentation.

Second, that carbo-hydrates must be withheld, while a proteid may be allowed when the acid fermentation is present, and proteids must be withheld and a carbo-

hydrate allowed, during the continuance of a putrid fermentation.

Third, that milk, containing, as it does, both proteid and carbo-hydrate, is contra-indicated in both conditions.

Fourth, that to properly feed an infant we must have at our command two foods, a proteid and a carbo-hydrate, to be used separately or together as occasion demands.

SOME UNSETTLED PROBLEMS AS TO CONTAGIOUS DISEASES.

BY H. J. HERRICK, A. M., M. D.,

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That certain diseases have the property of communicating an infection from individual to individual is a generally accepted statement. What diseases are thus communicated, by what exposure a disease is transmitted, what the specific infecting agent is, what the condition of system is which renders it susceptible to the infection, are questions not so definitely settled.

In all ages there has been a disposition to seek some cause of disease from without the body—in that seeking there has not been any very intelligent line of inquiry. There have not been inquiries made from the stand-point of known organs with known physiological function until within the later periods of medicine.

What diseases are contagious? In answering this question, as indeed all the others, it is essential that we have definite ideas of what disease is. It is often spoken of as if it was some agent acting independently of or from without the body. Often, also, the term disease is misleading, as the specific phase spoken of is only a symptom. It is not uncommon for physicians to speak of diarrhœa, dysentery, dropsy, cough, diabetes, fever and other symptoms as diseases, when, in fact, they are but symptoms of diseased conditions. To gain definite data on which to speak of disease, we must recognize life as the

result of organic action, death as a cessation, and disease as an impairment of organic function. Further it must ever be remembered that nutrition is elementary and an essential process of health. Every organ must be formed, developed and maintained under the process of nutrition. If these processes are carried on in their order, in each tissue and organ of the body there is health. In disease there is first and always a disturbance of normal nutrition—all disease is a result of disturbed nutrition. Fortunately, here we have a condition on which to stand, a base for observation. If we have a science in medicine, it must rest on processes or conditions in nature which are according to law. Uniformity of fact or phenomena indicates a law of action or condition. Scientific medicine can rest on no other foundation. Normal nutrition, then, is the point from which we must view the abnormal and diseased. What, then, is normal nutrition, and what are its conditions? To enter upon the answer of these questions is not our purpose at this time, except to indicate the substantial and unquestioned ground on which scientific medicine rests. We may mention the conditions of normal nutrition concisely and philosophically, as given by that prince of pathologists, Sir Jas. Paget. Under his lead we find a most sure and valued guide among the obscure fields of disease. He lays down the conditions of normal nutrition in the order of their importance, thus:

First. Right state of the blood.

Second. A not distant supply of blood to the part.

Third. A certain nerve influence.

Fourth. A right state of the part itself.

Now, a glance at these propositions receives assent, I think, without question. Further it may be claimed that with the two first conditions present the other two will always be present, unless disturbed by some external agency. I am unable to question these conclusions. I appeal to every medical man if they are not approved as

elementary positions. If so, we have substantial ground on which to rest a science of medicine. It is needless further in this connection to allude to the complex processes which are involved in the right state of the blood, further than to state that it involves right secretion, right digestion, right absorption, right assimilation, right excretion. It involves the completed function of the blood-making and blood-purifying organs, without which there can be no right state of the blood, no normal nutrition; hence disease.

It is very well for the physician to keep constantly in mind the fact that everything whatsoever in the world exists as it does according to law; whether the thing be organic or inorganic; whether it is high or low in the scale of organic being. When an organized being finds its perfect type in growth and development, it has conformed to the law of its being; when it has not reached that perfect type in growth, development and continuance, it has not conformed to the law of its being. It is then the problem of the scientific physician, knowing the law and its conditions and observing the effect, to seek the disturbing cause. As the astronomer, knowing the laws which govern the movements of the heavenly bodies and their orbits, on observing one turned from its accustomed course, by calculation estimates the force and direction of the disturbing agent, following the lead of his conclusions or calculations, is able to point his glass with unerring precision to the disturbing cause. That illustrates and affirms the *science* of astronomy. Some such problems, though involved in much greater perplexity, are placed upon the physician to solve, if he would estimate the causes of disease.

If medicine would take its place as a true science and its practice assume the definiteness and precision of an art, they must find their resting-place in the known and demonstrated laws which prevail in the processes of normal nutrition. It is not uncommon that an apology is made for

medicine as an uncertain science, in contrast from so-called science of law and theology—subjects which are wholly in the field of metaphysics and speculation. I take exceptions to this position for medicine as a science, and if it is not recognized among thinking men as having established principle in science, it is because we come short of our powers and privileges with the light of to-day.

It relates to matter which we can see, feel and handle, and may know the laws of its condition. Though we cannot define the essential force of life, we may bring the same charge against electricity, chemistry and all essential causes. As in other sciences, we know the laws and conditions under which the force acts. Further I would digress from my main purpose to state that the art of medicine, if based upon established scientific principles, is no more uncertain than other arts are. The practicing physician is an artist. The success which he makes in his art depends upon the personal judgment he is able to bring to the interpretation and application of scientific principles for the relief of a diseased or disordered mechanism. His is as much a true art as his who would direct the ship across the pathless ocean under the guide of the science of navigation, or he who constructs a house guided by architectural principle. No one doubts the scientific relation of these arts. The application of those principles involved in the science is the art. The skill in the art is in the judgment exercised in applying the science.

The physician should be an artist. If he treats disease unguided by established principles, but by so-called blind experience, he is an empiric. If he pretends to have guiding principles other than those of established physiological science, he is a charlatan. If he uses various devices, undemonstrated theories, to dupe an innocent, confiding patient, he is a quack.

Why has not the profession planted itself so firmly upon

established guiding principles as to be able to show to any intelligent mind the virtue of the science of medicine in contrast from any form of pretext?

Verily, we do not come up to the standard of our privilege and duty. The difference between a genteel quack and a scientific physician is not sufficiently manifest. The reason is largely because the one leaves his judgment at home, if he has any, and the other plies his wits to hold the confidence of his patient, by soothing placeboes. But to revert to the line of our main inquiry, we observe that under nutrition the distinguished author before mentioned points out the analogy between secretion, excretion and nutrition; he also subdivides the processes of nutrition into growth, development and maintenance.

In this estimate of the essential factors of nutrition, the one of all to be noted from its importance is the right state of the blood. Any departure from that right state of blood is prime factor to all so-called idiopathic diseases. Let us here note what seems to be evident, that whatever morbid material enters the system, from whatever source or through whatever channel, finds its way *first into the blood* current before it finds its way to the tissues, and works its influence in disturbing nutrition and producing diseases. Or it may, by its action upon the blood itself, work its disorganizing effect and prevent the processes of assimilation and elaboration of nutritive material. In the great life current of blood which flows through the heart, arteries and capillaries to the tissues where imbibition appropriates the material adapted to the special wants of that tissue—any material which enters this stream not adapted rightly to nourish some tissue, furnishing some material required for their growth, development or restoration of wear and tear, is obviously an intruder. It is a poison. By its disturbance of imbibition, it impairs nutrition, when disease is the result. One or more foci of disease are produced in such tissues, to which are

most obnoxious the offending materials. It may be the skin, as in the exanthema and various forms of skin diseases; it may be some one of the varied phases of lung disease; it may manifest its disturbing influences upon the blood-making organs themselves, or it may affect serous membranes, bone, liver, kidneys, or indeed whatever tissue to which the offending material is most obnoxious. With this view of the nature of disease, we may be able to gain some light as to some of the obscure problems involved in the consideration of contagious diseases, as also all idiopathic diseases. The morbid material affects either first the corporate structure of the blood itself, impairing some of the blood-making processes, or else impairs imbibition.

What is the specific infecting contagion, has been and is the all-absorbing question relative to contagious diseases. Pathologists seem to think if the minute spark of infection can be focused under a microscope, then the great problem as to that specific disease will have been solved. Then the art of medicine will only have to apply the antidote, or the germicide, the antiseptic, and the diseased process will cease and all will be well. With this hope the eyes are peering into the firmament of the microcci with glasses of five hundred to a thousand magnifying powers. By these observers, variously skilled in minute research, we have been introduced to an innumerable host of microscopic bodies from air-bubbles, amorphous particles, chemical crystallized substances, bacteria, microscopic fungi, and various substances which are conceived to have the power to live in any living body with which they may come in contact and by a zymotic multiplication increase *ad infinitum*. Their presence in the morbid product, and this alone, is sufficient to give to them the credit of being the prime etiological factor of the disease. Now, this is a very captivating chase, and the whole profession has lent its willing following. Is it not time to get back to first

principles and take a new start after disturbing causes in the living organism? It is a fact generally accepted that bacteria swarm in all putrefying solutions and mixtures of organic matter. There is no lack of germs where the condition exists for their growth.

If the conditions are favorable for the plagues of Egypt, India or the Black sea here in America, here they will appear. If the conditions are favorable for yellow fever, cholera or black death, no quarantine can build an enclosure which says, "Hitherto canst thou come and no farther." If the conditions are favorable for malignant small-pox, scarlet fever, diphtheria, measles, there they will appear. Create the conditions in the homes of the inhabitants of this city for cholera and you will have it here; let the air be deprived of its quantity of oxygen and given an excess (of CO_2) carbonic acid, and further rendered irrespirable by effluvia from a crowd; at the same time let the diet be half rotten, dried or green vegetables and putrefying meat; let the water be filled with foreign matter, effluvia from the dead and putrefying animal or vegetable matter, excreta from the living, or charged with irritating solution from the mineral kingdom, and you have conditions such as, being variously combined, may and will produce malignant types of disease—typhoid, cholera, yellow fever, diphtheria *de novo*—without the introduction of the initial germ, or rather that furnish the essential conditions for the germ, if it be regarded as the immediate cause. The germ is living matter; its property is to exist upon dead or dying organic matter. Parasites never live and thrive in or upon a healthy, well-kept body during its age of vigorous life; the acarus never *infests* and *thrives* upon the clean and well-kept integument; the intestinal worm never infests and multiplies in a healthy intestinal canal. There must be a lowering of the vital activity in the part on which a parasite will thrive. Completed digestion prevents the

development of the torula; if digestion is feeble or arrested, these spores multiply rapidly.

The fully active normal processes in nutrition are able to resist the attacks of these myriad germs of life, which are ready to appropriate all unused or inactive material. Life is activity. Death is inactive. Nature is conservative; she would gather up the fragments that nothing be lost. We may see in this, if my reasoning is correct, a conservative principle, which exists in all living beings. It is true that every living cell is but food for some other bioplasmic mass when its activity shall have been spent, and it is true that each living being has certain means of defense during its active life.

"See dying vegetable life sustain,
See life dissolving vegetate again;
All forms that perish other forms supply,
By turns we catch the vital breath and die."

There is also a principle of conservatism in every species, for a certain limited period of life, both to resist encroachments of disease and repair injuries that may be received. There is a certain power of resistance against all encroachments upon the normal physiological processes so long as the conditions of nutrition are present. There is a *vis resistantia* in the life processes themselves so long as they meet the standard of their highest privilege. Then it would limit all destructive processes; the vital force holds in abeyance chemical affinities. It excludes septic agencies up to a certain degree. It resists by well understood processes the extension of diseased action. The vital force exceeds all other forces under limiting and favoring conditions. Now the condition for the perfect physiological function being present, contagion from others of whatever form are resisted and becomes no contagion to one thus guarded. We maintain then that it is useless to quarantine a contagion where the conditions are such as to secure to each person full and perfect health; he has

under such conditions a quarantine in himself and his surroundings.

These statements I approve as being well founded in reason and analogy; but, you say, it is very well in theory, what are the facts? I must here present facts and affirm that this reasoning, and this alone, will assist in a solution of a large number of facts familiar to every physician of even a limited practice. It is well known that of those exposed to the contagion of the most infectious diseases only a limited number are susceptible to the disease. In an epidemic of scarlet fever, a disease specially contagious in childhood, a large number may escape the most direct exposure, and even those of the same family, living in the same house and having the same diet, may resist the encroachment of the disease. Others may have the disease in so slight a form as to be hardly distinguishable, having no grave complications such as those affecting others in the same house or neighborhood. These differences must be attributed to an immunity secured by the condition of system.

Again small-pox, a disease which, of all others, has been regarded as most contagious, and which is marked by the greatest uniformity in incubation, invasion and symptoms, and is manifestly the result of a most characteristic specific poison, has the testimony of history to the theory that with perfect sanitary conditions and a high standard of health it is shorn of its virulence to a large degree. Before the great boon given to the world by the immortal Jenner in vaccination, inoculation was practiced as a preventive. You are aware how the patient secured immunity against the severity of the disease. The pest-house was then established, where the individual was directed and put in as perfect a condition of health as was possible, and then inoculated with variola, suffering little or no danger from the disease. Indeed, I am of the opinion that many of the vaccinations with what has been regarded

as bad matter, which have been followed by serious inflammation and constitutional disease, had often been the result of a bad condition of system rather than bad virus. The state of blood is the most essential element of nutrition. The susceptibility to the action of a contagion depends upon the condition of system more than any other factor. That condition may be from a deficiency of some of the essential elements, general impoverishment of blood or an excess of effete matter. With such a changed condition the vital force is impaired, the *vis resistantia* with which every individual is endowed is lost. Septic inoculation can only take place when inactive, retrograde, effete matter exists in the blood, lowering the vital force and impeding the metabolic changes. Tubercle cannot be inoculated in a person of perfect health; the infective material, whatever its form, is not absorbed or is speedily eliminated.

The infection of erysipelas and diphtheria—allied diseases—cannot be inoculated into a system which is in perfect health; hence the importance of prescribing for the exposed, as also the sick, in a family where the disease prevails. Hospital gangrene can be propagated only where there is grouping together of wounded and sick, with consequent unsanitary conditions. The plague, with its many formed visage, extending from the dense populous districts of the Orient to the Occident, can only traverse its usual course when it finds material and conditions favorable for its journey. Cholera, moving from the pestilential nests of India, extends westward without regard to quarantine when material is found for its deadly flame. In its home it prevails at all seasons among certain classes of people, and is not regarded as contagious, but due to unsanitary conditions in food, drink, clothing and an atmosphere unfit for respiration. Yellow fever, a disease regarded with so much dread in our own country and by some as contagious, cannot be carried out of certain districts into a more temperate

climate where sanitary precautions prevail, and is not regarded as essentially contagious excepting under unsanitary conditions.

To say that "the contagion operates transformingly on the live bodily material which they affect," as a distinguished author asserts, is but to leave the solution of the question in obscurity. True, we may be unable to solve all of the questions to a demonstration that may arise relative to a contagion modifying nutrition at this period, yet by such analysis of the factors we may at least establish a "working hypothesis." Our faith should only be given where known and accepted physiological processes are interfered with. The ultimate element of matter in all physical and chemical processes is the atom. We estimate the various processes and conditions by interrogating the elemental nature and affinity of the atom. Chemistry is built up upon the law of affinities between atoms.

We know that the ultimate element in all living processes is the cell; the cell forms tissue, the tissue forms organs, the resultant of organic function is life and health. Biological science begins with the cell; it considers its conduct under the silent, secret forces of life with varying conditions. No one can fail to appreciate the practical importance of these questions in the daily duties of the physician at the bedside. He is not to ponder over a disease with a name as something apart from a disturbed organism and treat this or that symptom by empirical means, but he must treat the disturbed organism as due to certain disturbances in nutrition, and that disturbance is always due to definite cause or causes. Another fact is pertinent and obvious growing out of this line of inquiry: that is, that no disease occurs suddenly, as is often supposed. All minute processes of nature are slow. In the body, minute, imperfect, metabolic processes may have been going on for days, weeks or months before the disturbance is manifest in the disturbed organ, as in rheumatism, pneumonia,

apoplexy. Further, it is to be observed that the skill of the physician is in *early* discovering the departure from the normal processes, appreciating the cause, removing it and guiding back to the paths of health. He does not cure disease, even if he conceive a so-called specific cause. He has no antidote. He has no specific remedy. He can only quicken the action of organs of excretion, stimulate and perfect the blood-making processes, work certain alterative action upon the assimilative processes in the blood, and thus aid the conservative, beneficient processes which look to a return to a standard of health. He furnishes the conditions—Nature heals. To know where our power over disease begins and where it ends; to know well the few efficient instruments at our command for treating it and having skill to use them, is the need of to-day. The coming doctor, if he would walk in the true light, must rest on these principles. He is to know Nature's ways and assist her when she is weak. His function is, manifestly, to furnish the conditions most favorable for her restoring hand.

A MALPRACTICE SUIT.

BY P. P. POMERENE, M. D., OF BERLIN, OHIO.

On the night of June 8, 1886, I was called in haste to see Stephen K——, who, it was supposed, had sustained a fracture of the thigh. My associate in business, Dr. B. F. Teters, responded to the summons. Upon his return, he informed me that the injury was a serious one, there being comminution of the lower third of the femur, with splitting of the condyles. The fracture was caused by direct violence. The stump of a tree, which had been blown out by the roots, in rolling down a steep bank, struck him to the ground; one root caught his thigh just above the knee and crushed it into the stony earth. The symptoms manifested were shortening of about three inches; the foot was strongly inverted, with the toes on the instep of sound leg; the thigh and knee were largely swollen and extensively echymosed, with some abrasion of the skin; the important structures of the popliteal space had evidently suffered considerable injury, but to what extent could only be estimated by results. The lower fragments were displaced upward and outward, and the upper fragment downward and inward, indicating that the lower end of the upper fragment was broken off obliquely from without inward and downward.

Dr. Teters adjusted the fracture by the ordinary means of extension and counter-extension, and succeeded very well in drawing the leg down to equal length with the

sound one. He dressed the limb in the horizontal position, with adhesive strips applied for attachment of weight for extension, and elevated the foot end of the bed, so as to allow the weight of body to keep up counter-extension; he applied coaptation splints of binder's board and sand-bags to prevent lateral displacement. We continued much the same treatment for fifty-seven days. This period is more than the average time required for good union in an ordinary case, but, owing to the extent of the injury, union was somewhat delayed, and even at this period it was not as perfectly solidified as desired, but other symptoms demanded release from the recumbent position and so close confinement. At this time there was almost complete anchylosis of the knee-joint, and, as I had anticipated, an evident paralysis of the flexor and evertor muscles of the foot, which was strongly extended and the toes inverted; while the foot could be moved passively, the patient had no control over its motion. This condition must have been due to contusion and temporary paralysis of the external branch of the popliteal nerve; the ankle-joint was partly anchylosed. This was in the midst of the hot months of summer, and the patient was threatened with bed-sores. Taking all the circumstances and conditions into consideration, I thought it good and safe practice to remove the dressing, and run the risk of the probability of some shortening, and endeavor to meet the other indications. At this time there was no perceptible shortening. I removed the dressing, but ordered the patient to remain in bed one week more, when I allowed him to go about with crutches. I desired to keep him under treatment for some months more, but I saw him only three times after the dressings were removed, and that within three weeks, when there was evidently some shortening taking place, but not to exceed an inch. About this time he left my care without my con-

sent or dismissal, and refused to submit to any further treatment.

Within two months I received notice that he had begun suit against me for the modest little sum of ten thousand dollars. In his petition he alleged that the fractured limb had not been properly adjusted; that extension had not been efficiently maintained; that the limb had been too tightly bandaged; that I had not given him proper attendance; that the limb was shortened four inches; that the knee was permanently anchylosed, function of the foot destroyed and the use of the limb permanently lost; and all this due to *negligence and unskillfulness*. At this time I did not know just what his condition was, for when I last saw him it could not be positively foretold what the final result would be. I knew, however, that a very important factor in the case, both surgically and legally, was time, and, consequently, I had the case continued from term to term of court, until finally I allowed it to come up for trial last month. Upon the order of the court, the patient and plaintiff was carefully examined by Professor J. W. Hamilton of this city, and by the medical faculty of my own county. The examination revealed the following condition: Shortening of one inch; function of the knee-joint largely restored, allowing flexion of the leg upon the thigh almost to the angle of ninety degrees; the union perfectly solid; function of foot greatly improved; the leg is strong, and patient, or rather plaintiff, is able to return to his avocation of farm laborer.

As customary in malpractice suits, the principal charges were those of negligence and unskillfulness. The testimony of neighbors, and even of plaintiff himself, showed that I had not neglected him in any way as far as the laity are able to judge. The medical witnesses all agreed that the result was a good one, considering the nature of the injury, and that the treatment was correct in every detail.

Considering that the plaintiff had so utterly failed to establish anything against me, I instructed my attorney to submit the case to the jury without any argument on his part. The judge's charge to the jury was clear and concise, and no jury of ordinary intelligence could have rendered but the one decision. After a short consultation, the jury returned with an unconditional verdict in favor of the defendant.

Though the verdict was in my favor, the pecuniary loss is still considerable. The plaintiff, as in most malpractice suits, was a man without principle or money, so that a considerable portion of the cost of trial (all that was made for the defense as well as my attorney fees) devolve upon me. This, with the loss of business, the worry and anxiety that such a suit forces upon a busy professional man, is a great imposition and outrage.

While the surgeon may feel confident that a case cannot justly be made out against him, he is also cognizant of the fact that upon questions involving high science juries are notoriously unreliable. All this, besides the fact that our professional colleagues, though apparently our friends, seem to feel a deep sense of gratification to point their fingers at us when our backs are turned, is too much to bear without any means of recourse or retaliation. And yet, under the present statutes of the state, we are any of us liable to be thus harassed at any moment, without the shadow of a cause and by the most unprincipled and undeserving wretch. Three such cases have occurred in my own community within a year, and we hear of them almost continuously from all over the state. Now, would it not be proper and right for this Society, as a means of protection to its individual members, to wait upon the legislature of the state of Ohio and implore them to so amend the statutes that no one can institute suit for malpractice against any physician or surgeon unless his case be first examined by a committee of physicians and surgeons legally qualified, and pronounced by them to be a case which has at least the *appearance* of malpractice?

A FEW CASES OF DIABETES WHICH HAVE NOT BEEN CURED.

BY W. J. SCOTT, M. D., CLEVELAND, O.

I note these cases to make a few points in the treatment and clinical management of the disease. Last year Mr. Pavy came to this country to tell us that "we can cure diabetes mellitus by diet and without medicine." This statement is misleading and really untrue, according to my experience. Diabetes can be benefited by medicines, without a restricted diet, to some extent, but much better by both means. So, on the other hand, recently there have been cases reported cured by Clemens' solution of bromide of arsenic, one reporter giving six cases and another four cases. The record does not say that there were any other remedies used, or restrictions put on the patients' diet. I presume, however, that they had a restricted diet given. Clemens' solution has been given largely under the name of "French mixture," with assurance of cure. This wonderful remedy is

Arsenious acid, grs. LXXX,
Potassium carbonas, grs. LXXX,
Bromine, grs. 160,
Distilled water, to ℥ XV ss,

to be compounded by pharmaceutical rules. This is the liquor arsenalis of our pharmacopia, with the bromine added, or a stronger mixture than Fowler's solution. Accordingly, I was in hopes that by the use of this double alterative a great advantage might be gained in

the treatment of this most vexatious disease. I prescribed the mixture to my cases perseveringly, but only to be disappointed in the end, without the benefit claimed for it.

The cases which I report are, in short:

Case I. February, 1886, Col. B. C., a railroad passenger conductor, age 45; height 6 feet, 3 inches; weight, in health, 270; reduced to 180; in February, urine 7 quarts; sp. g. 1045; very thirsty; general condition weak, emaciated, bloodless, unable to work longer. He had an ulcer on the ball of the big toe, which was not painful on account of the anæsthesia of the toe, which has continued since.

After a month he had gained so much that he went to work again. He continued the non-glucose diet. In June he became lame, and had an abscess in the thigh, which was opened early and freely. From this he recovered so much that in July he again went to work. At this time he was not thirsty, and sp. g. 1023; quantity normal. In August and September, quantity normal; sp. g. 1030. From the time he recovered from the abscess, he took the solution of bromide of arsenic for six months without controlling the formation of sugars. It was discontinued, and resumed with the same result. In April, 1888, he had an abscess of the toe and foot, with the quantity of urine normal and sp. g. 1030, 1028, etc. During all this time, when I found the urine superacid, I gave him citrate of lithia to reduce the acidity and diminish the amount of urea.

Case II. Mrs. K. Saw her in November, 1885; had been sick one year; thirsty, diuresis; had lost thirty pounds in weight; quantity five quarts; sp.g. 1040; prescribed diet and gave lithia. In December, better; gave glycerine one drachm and Fowler's solution five drops three times a day. In January and February, 1886, about the same, only gaining strength and weight In March I

directed diabetic bread. With the use of this, sugar was increased. By test for starch, this bread was found to contain considerable starch, and it was discontinued with advantage. In April gave green vegetables, non-saccharine. During the summer she gained strength and flesh so much that she thought herself well. Having become tired of the strict diet, she lived on skimmed milk and buttermilk during the months of October and November, while she was taking iodide of potassium and Fowler's solution with apparently some benefit and reduction of sugar. After this she took the solution of bromide of arsenic every day, without much, if any, benefit. In the spring she went to Green Springs, drank the waters and took the baths, and for some time seemed well and hopeful, however living very carefully for one in her condition. In August she contracted dysentery, which speedily reduced her strength, and she came home and died in two days with acetonæmia. Whenever I examined I found sugar; although the thirst was relieved and the quantity of urine normal, the specific gravity was always above normal, and yet the patient living absolutely on a non-saccharine diet. Whence came the sugar, if it was not converted from albuminous compounds? It could have been from waste of system.

Case III. P. H. This case is similar in almost every particular. Commenced treatment in October, in 1885. He was much reduced in flesh and strength. In three months he had gained flesh and strength and went to business, and has continued to attend to a light business since. Previously he worked in an iron mill. I have always found sugar on examination. I cannot report him cured. When I have found the urine very acid, I have prescribed citrate of lithia and Fowler's solution. I have done this to get rid of the urea and uric acid, which I believe come from too much nitrogenous diet. This may be corrected by the patient living on whey, sour milk or buttermilk.

Case IV. M. P. This case gives me pleasure to report. When I first saw him as a patient, he had suffered with characteristic symptoms of diabetes, not knowing what they meant. I saw him in January, 1881. By the diet regimen he was cured in three months, and went to work again as a chief clerk in a railroad office. By close attention to treatment and management, he was able to work for three years. Occasionally he would transgress and have to pay the penalty. Many times in these years I found the urine normal. Whether in this last case the improvement will remain permanent, with care, I doubt. So I think of many cases of diabetes which have been reported cured, with only improvement of symptoms, under treatment. These cases are only specimen cases, which I have selected to illustrate the difficulty or impossibility of curing the disease. In these cases, as treated, it is plainly shown that by careful management life and comparative health may be much prolonged, but not cured. I have found, also, in some of them sugar, when fed on nitrogenous food entirely. Some one of the glucoses—which one I have not determined. It is evident, however, that the glycogenic or glycogenitic function is able to split up nitrogenous compounds into urea, uric acid and glucose, with strong disposition to the formation of glucose. It is probable that albumen and cellulose are also converted into glucose to some extent. From these materials, however, the urea and uric acid will not be formed, so that in certain conditions such diets may be employed with great advantage. Watson compared the stomach to a stew-pan, from the many offices it performs. We may go further and say that here we have in this wonderful organism a chemical laboratory, in which things are done which baffle the skill of the chemist. Compounds are produced which have the same chemical composition, and have different properties as manifested by polarized light,

one turning the ray to the right and the other to the left. Where this impress is given to the material has not been discovered, either by experiment or clinical experience, or by physiological or pathological observation. Under the hypothesis that the liver performs the glycogenic function, we fail to explain the phenomena. Many workers in this field of pathology have advanced many different explanations of the conditions, while many experiments, a great amount of work, and good work, have been expended on the subject, yet with all we are now far from a satisfactory explanation of the etiology or a successful treatment. The more we study the disease the less we seem to know about it—the deeper we get into the inexplicable mysteries connected with it. The nervous conditions are full of difficult problems for explanation. Experiment has proven that when the liver is well saturated with arsenic there is less glycogen present. If the system is saturated with some alkaline salt, the function is held in abeyance for a time. With all, however, alteratives, with diet, with treatment, with special medication under various hypotheses, we have as yet no panacea for the condition.

A case which is cured by diet differs *in toto* from one which is only benefited by such a course. There is a strong analogy between diabetes mellitus and diabetes insepedus, yet no one pretends to cure diabetes insepedus by diet alone. If I quote some opinions as to the etiology and pathology of investigators and experimenters, we can see the utter impossibility of cure by any one course or any one remedy in every case.

"M. S. Falls attributes the condition to disease of the diabetic center located in the medulla oblongata." "Sugin of Vienna says that of the two forms of the disease, ninety per cent. of both are due to some disturbance of the nervous system;" but does not account for the other ten per cent. "Arnaud, in a recent thesis,

says that syphilis may be the cause, by affecting parts around the glycosuric center." "Kisch discovers diabetes to be very general consequence of lipomatosis." "In fat persons there is also a certain pressure upon the liver, as the result of which, according to Pavy, glycogen passes rapidly into the blood, and is converted into glucose."

What of the cases which have not lipomatosis, which are more numerous than the other cases?

"Ebstein is very sceptical with regard to the etiological relation of brain affections." "Dr. Pavy, before the Ninth International Congress, reasserted that the immediate cause of glycosuria is an insufficient dearterialized venous blood, which in turn is due to a vaso-motor paralysis and dilatation, especially of the chylopoetic viscera."*

Amongst such a variety of opinions of good workers and observers, what are the clinical indications for a promising course of treatment? For one man to say that medicine does no good, and for another to give some definite prescription which is to cure every case, both these positions are fallacious. We know that even small doses of opium and potassium bromide will diminish the quantity of sugar without change of diet, but better with a restricted diet. Large doses of opium diminish thirst and the quantity of sugar and urine. The *modus operandi*, however, is not clear; the fact, however, is well known. However, the clinical management and judicious treatment is of the utmost importance to the patient. By a treatment founded on good knowledge of the subject, the life of the patient may be prolonged for years. What may be done will, however, depend largely on the etiological hypothesis, and as yet nothing has been well settled, and hence our want of success. There is another important question, yet to be settled, as to the quality of the glucose. The sources from which they have been derived may make

* Sajous, Vol. I.

all the difference between cases. The glucoses—cane sugar and sugar of milk—have certain distinctive qualities, especially when tested by polarized light, which differs from the glucoses, dextrose, lavulose, galactose and isonite, and from the amyloses—starch, glycogen, dextrine, inuline, gums and cellulose. Sugars and starches may be broken up into some of the others under different conditions as acted upon by different ferments, and it is possible that the ferments derived from different sources, the organs being in altered condition, the ferment being changed, the products would be different, hence differences in cases. These conditions will continue till something more is wrought out on the subject. It is also very probable that albuminous compounds are broken into such materials as that dextrine and urea or uric acid may be the result. In this way, although the patient, as I know one of mine was, may be fed on nitrogenized and albuminous materials exclusively, he may yet have glucose present in the secretion. If not dextrine or grape sugar, at least one of the glucoses. I do not know that investigation has been made in this direction. It seems to me here may be found important distinctions and differences in cases. Recent investigations, although they have been laborious and painstaking, have not developed much of advantage clinically or therapeutically. The wonders of the organism have been greatly increased. I would say, in view of a study of this subject, that we have gone much farther than Watson and his stew-pan had. We may say that from the first step in digestion, the insalivation of the bolus, to the appropriation of the material in nutritive acts, and again the retrograde changes, and the formation of other and often noxious compounds, we have a wonderful chemical laboratory, in which many things are done which no chemist can imitate. It has been said that, to explain the phenomena of diabetes, we will have to discover a new glucose compound. If that is to be done, it will be in consequence of some of those changes which are wrought in the organism which have so far eluded our most diligent search.

CONSEQUENCES OF ACUTE SUPPURATION OF THE MIDDLE EAR, WITH SPECIAL REFERENCE TO OPENING THE MASTOID.

BY A. R. BAKER, M. D., CLEVELAND, OHIO.

The truth of the old saying, that an ounce of prevention is worth a pound of cure, is illustrated nowhere so forcibly as in the treatment of mastoid diseases. It is not altogether improbable that the time may come when the more serious surgical procedures recommended in this paper may no longer be necessary, owing to the early recognition and prompt treatment of mastoid inflammations. Although this is a consummation devoutly to be wished, so long as there is the present ignorance of these diseases among the general practitioners, who usually see and treat them in the early stage, and so long as a running from the ear, or even an earache, is looked upon by the laity as a trifling matter, and so long as the nasal douche and similar appliances are used indiscriminately for treating catarrhal troubles, and so long as no precautions are taken to protect the ears while bathing, we must expect to meet mastoid inflammations, often resulting in serious complications, which may require surgical interference to save life.

In order to consider the subject of prophylaxis satisfactorily, it would be necessary to enter into a discussion of the entire pathology, etiology and treatment of inflammation of the middle ear; but we must content ourselves by saying that "taking cold" must be avoided by

daily cold sponge-baths, the avoidance of overheated rooms, the wearing of woolen underclothing in all seasons of the year, and careful attention to secure heavy-soled, large shoes. The prompt recognition and treatment of aural complications of the acute exanthemata—especially scarlet fever—are of great importance. The use of the nasal douche should be abandoned. Great care should be taken, when any perforation of the membrana tympani exists, to plug the auditory canal with cotton before bathing. All purulent discharges from the ear should be stopped as soon as possible. In any acute inflammation of the middle ear, it should, if pain be present, be syringed with hot water. The naso-pharyngeal cavity should be closely inspected and treated. The Eustachian tube should be kept pervious, and, if any accumulation of pus or serum be confined within the middle ear, the membrana tympani should be perforated at once. If all pain, fever and tenderness on pressure be not relieved by the above measures, leeches should be applied. If all cases be thus treated promptly, intelligently and skillfully, few cases of serious mastoid trouble will be encountered; but, even with the most skillful care on our part, we will occasionally meet a case of serious mastoid disease requiring more active surgical interference.

The history of the operation for the opening of the mastoid is one of the most interesting in the entire subject of otology. Probably no operation has been the subject of so many fierce debates, at one time receiving the hearty approval of the entire profession, and the operation even prostituted from its legitimate indications—that of providing a means of escape for the retained products of inflammation—to that of an empirical procedure to relieve a symptom—deafness. At another time the operation fell in such disrepute that von Tröltsch, in 1861, confessed that he would have hesitated to undertake the opening of the mastoid with any instrument but a probe,

in a case which he reported, of suppuration of the middle ear, in which Wilde's incision failed to give relief.

There are many surgeons who have been credited with the first performance of this operation, and many of them, without doubt, deserved credit for their work in this direction; but the honor of establishing this operation upon a firm surgical basis belongs to M. Jasser, a regimental surgeon, in 1776. The details of his first case, as published in the *Journal de Méd., Chim. et Pharm.*, 1793, are so accurate, and the indications for the operation so clearly described, that I will give a short abstract of this case:

"A soldier complained of a discharge from his ear. This matter was very fetid, and the patient occasionally experienced severe attacks of fever, accompanied with violent pains, particularly in the right ear. These symptoms were alleviated by blood-letting, laxative and refrigerant remedies, and the application of topical emollients and anodynes. These symptoms returned frequently, and were always treated in a similar manner.

"The patient came to the hospital again in 1776. He had a violent fever and extreme pain. He was bled three times in the space of two days, gentle laxatives were employed, and emollient injections and vapor-baths to the ear; blisters were placed upon the nape of the neck, and, behind the ear, leeches were applied. All these means were successively used and repeated several times. None of them, however, relieved him. The patient continuing to suffer and being without sleep, opium was occasionally administered.

"Ichorous and fetid pus continued to issue from the right ear. At the termination of three weeks, a soft elevation on the mastoid apophysis appeared. Emollient cataplasms were then applied, and the tumefaction disappeared on the following day. Some days after, it again appeared. At last, it was determined to make an incision in the tumor, an inch long. A few drops of a thin and

acrid humor, nothing more, issued from it. Poultices were continued, but the pains were as intense as usual. It was then determined to open the bone, and a sound was introduced into the cells of the apophysis. A pectoral infusion, nothing else being at hand, was injected through the opening by means of a syringe. All the injection issued instantly from the right nostril. The pain abated, and, the wound being dressed in the dry manner, the patient went to bed and slept profoundly during the following ten hours. After dinner the dressing was renewed and the same injection repeated. The discharge from the ear diminished daily, the odor and color of the matter became better, and in eight days he had neither pain nor discharge. The injections were then discontinued and the wound dressed with dry lint only. The bone was kept exposed for some time; but, as no sanies proceeded from it, a cicatrix was permitted to form, which was completed in about three weeks. From that period, the soldier continued to enjoy good health and felt no pain in the ear."*

The intelligent manner in which the case was treated by M. Jasser, more than a century ago, and the good, sound, surgical principles which guided him in his operation, would be creditable to any surgeon of the present time. But, unfortunately, the operation was soon enlarged, and was supposed to be useful in the following cases, as indicated by Arnemann, Professor of Medicine at Göttingen, and his followers:

1. When there is complete deafness, or when deafness pertinaciously increases.

2. When mucous fluids which are secreted in the ear remain there and produce congestion.

3. When the ears are painful and there is heard in them a continual ringing.

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* 'Saissy on the Ear,' translated from the French by Nathan R. Smith, in 1829.

4. When the Eustachian tube is obstructed by mucous or other fluids which may be removed by injections.

5. For the purpose of relaxing the membranes and other soft parts of the drum of the ear, and thus giving pliancy to the small bones of the ears.

6. When the cells of the mastoid apophysis contain purulent matter, and when they are carious.

In the latter cases, Saissy very pertinently remarks: "The perforation of the mastoid apophysis is infinitely less painful, and the danger is nearly nothing, because nature accomplishes nearly the whole. The utility of the operation corresponds to its necessity, and it deserves to be preferred to all other remedies. The reasons why it is preferable are so obvious that I think it is useless to designate them."

It does seem that, with such good authority for performing the operation, that von Tröltsch need not have hesitated to open the mastoid, even with other instruments than a probe. The indications for the operation are so clear in these cases that no one should hesitate, while in all the other indications, as formulated by Arnemann and his followers, it is as clearly contradicted. It could not possibly do good, and might do infinite harm. But it seems as though some evil genius held sway in the minds of the physicians who have had to do with this operation, urging them to perform it for all kinds of ear diseases; and then, when some unfortunate accident, as the death of the Danish physician Berger, who had it performed upon himself for the relief of a chronic proliferous inflammation of the middle ear, occurs, the operation is condemned in all cases and under every circumstance. While I have been a most enthusiastic advocate of the operation, and believe that hundreds of lives have been saved by it, I regret to say that I know of a case having been operated upon, within a few months, for the relief of deafness, and, when no relief was afforded, my published papers were quoted

as sanctioning it. A gentleman called upon me, about two years since, for a continual ringing noise in the ear; he also complained of some dizziness and deafness, and insisted upon having an operation performed. I refused, assuring him it would do no good. He then consulted a general surgeon, a man of brilliant attainments—a keen surgical mind—who perforated the mastoid; of course, with no benefit. Now, it is such operations as these that bring it into disrepute. If surgeons only kept in mind the fact that it is not an operation to cure deafness, to cure dizziness, to cure pain, to cure any symptom (although it may incidentally cure all of these), but that it is an operation to evacuate retained pus or remove dead bone, these unfortunate mistakes would not occur. I may illustrate, in a crude manner, the object to be gained, as follows:

We have here the middle ear in close relations with the cerebral cavity above; the external auditory canal on the outer side, separated by the drum membrane; the orifice of the Eustachian tube in front, and the mastoid cells behind. Suppose these cells are filled with a purulent secretion; it must escape into the middle ear by a more or less contracted opening, and from there into the external ear through a perforation in the membrana tympani, or possibly through the Eustachian tube into the fauces. Now, what operation is more clearly indicated than to open directly into these cells at this point, and evacuate the purulent matter? The necessity for this procedure is doubly called for, because this focus of purulent secretion is in such close relation with so many important structures. There is above the brain, separated only by the merest shell of bone, often fenestrate in the normal condition. We have in front all the important structures of the middle ear. We have behind and on the inner side the transverse sinus, and on the lower side the jugular vein. The internal carotid artery and the facial nerve

are also in very close relation, and not infrequently involved in the inflammatory action.

Some of the most frequent causes which lead to death as the result of mastoid diseases are caries and necrosis of the temporal bone, purulent meningitis, cerebral abscess, pyemia, septic phlebitis, thrombosis and embolism. I have discussed this subject at some length in a paper read before the Northwestern Ohio Medical Association, and published in the January No., 1888, of the Cleveland Medical Gazette, in which I said that "I wish I could impress upon your minds the fact that, excluding the few cases as the result of traumatic causes, cerebral abscess in the young or middle-aged is almost always the result of chronic purulent suppuration of the middle ear. It seems to have been one of the slowest lessons the medical profession has had to learn, that, when a collection of pus was found in the brain after death, it was a pathological process extending inward, instead of pus formed primarily in the brain and endeavoring to find its way outward. The ease with which an inflammation can be propagated from the middle ear to the meninges, and thence to the brain-substance, can be easily understood by a consideration of the anatomical points involved. The only wonder is that more people do not suffer from meningitis and cerebral abscess. But nature seems to have been leniently disposed toward us in this matter, and, so long as there is a free opening for the discharge of pus, serious brain-lesions are comparatively rare; but, let the outlet be closed, and we immediately have serious trouble. I surmise the frequency of death from cerebral abscess and purulent meningitis is very greatly under estimated by physicians in private practice, where post-mortem examinations are comparatively rare. I have collected notes of over fifty cases of this kind, from various sources, in which post-mortem examinations have proved that death resulted from th-

consequence of suppuration of the middle ear, either from cerebral abscess or purulent meningitis, and this list could be indefinitely extended by reference to hospital reports and the periodical literature of the past few years.*

"Deaths from pyemia, septic phlebitis, thrombosis and embolism are not infrequent. The transverse sinus is the most frequently affected where it traverses the temporal bone on the inner side of the mastoid process. At this point it is in very close relations to the mastoid cells; but the superior petrosal or cavernous sinuses may be involved, and, when there is a fissure in the lower wall of the tympanic cavity, the jugular vein is very liable to be affected.

"These cases run a very uncertain course, but usually terminate fatally. Death occurs frequently within a day or two, with symptoms of cyanosis and collapse. At other times, the course of the disease is a chronic one. There may be chills, followed by long periods of comparative good health; there may be metastatic abscesses and all the series of symptoms of pyemia from other causes."

The indications for opening the mastoid process, as most recently stated, may be summarized as follows: †

1. Purulent inflammation in the mastoid process appearing in the course of suppuration of the middle ear when persistent severe pain in the bone cannot be subdued by the application of the ice-bag, leeches, or by Wilde's incision. (Schwartz.)

2. Painful inflammation of the mastoid process occurring in acute and chronic suppuration of the middle ear, in consequence of growths filling up the external meatus or the tympanic cavity. When attempts to remove the

* See Politzer on 'Diseases of the Ear,' p. 526; Roosa, 'Treatise on Diseases of the Ear, Table of Fatal Cases,' p. 554.

† See article by the writer, on "Indications for Opening the Mastoid Process," in the Cleveland Medical Gazette for February, 1886.

obstacle to the free escape of pus have failed, the operation is imperative. (Grüning.)

The operation is indicated even though the soft parts over the mastoid are not swollen or infiltrated. (Politzer.)

3. When the posterior superior wall of the meatus is bulging, and when, after incision, the abscess is not emptied, and the symptoms of retention of pus continue. (Toynbee, Duplay.)

4. Persistent pain and tenderness in the mastoid process, lasting for days or weeks, in which there is probably an osseous abscess not communicating with the tympanic cavity. (Politzer.)

5. In every suppuration of the middle ear combined with inflammation of the mastoid process, in which fever, vertigo and headache are developed during the course of the affection, which may indicate a dangerous complication. In such cases the indications for the operation are vital. (Politzer, Roosa, Buck.)

It will be seen there is no allusion to deafness, noises in the ear, dizziness, etc., and I will repeat once more that the indications are simply for the evacuation of the products of inflammation and the removal of dead or carious bone. I will grant that there may be cases in which it is impossible to say whether there is retained pus or carious bone; but, if the symptoms are at all alarming, the surgeon would be justified in giving the patient the benefit of the doubt by making an exploratory operation.

There is much diversity of opinion as to the proper time to perform the operation of opening the mastoid. In a given case of acute inflammation of the mastoid, I have been in the habit of pursuing the following plan of treatment: When the first indications of pain or tenderness appear in the region of the mastoid, leeches are applied, and the ear is syringed frequently with hot water. If the pain continues and there is noticeable swelling over the mastoid, Wilde's incision is made down to and including

the periosteum, and hot poultices applied. In the vast majority of cases this is all that is necessary, especially if the throat and ear are properly treated, and a free exit of pus maintained by the diligent use of Politzer's bag and the syringe.

Of course, if there is any obstruction to the free discharge of pus due to impacted cerumen, polypi, exostoses, or any other cause, it must be removed. If the pain continues and the swelling is not promptly relieved by Wilde's incision, no time should be lost in perforating the bone, as the dangers from delay are many.

The necessity for prompt action is as urgent, and the indications for its performance somewhat similar to that for the opening of a felon. Delay in the one case may result in the loss of a finger; in the other, of a life.

As this is an operation that every general practitioner may be called upon to perform, owing to the necessity for immediate relief many times before skilled assistance can be secured, if you will pardon me for appearing pedantic, I will describe somewhat minutely the manner of performing the operation, and exhibit a few of the instruments made use of.

In making Wilde's incision, any stout, short scalpel will answer all practical purposes. The incision should be made from below upward, so as to avoid injuring any of the important structures in the neck. Anyone not having experience will be surprised to find how deeply the bone is situated in this region, especially if the tissues are swollen and infiltrated. It is not necessary to endeavor to avoid the posterior auricular artery, as the course of this vessel is so variable that you will probably not succeed in doing so. The free hemorrhage resulting from its division is salutary rather than otherwise, and can be controlled by pressure if necessary. The incision should be made close to the auricle, an inch and a half in length, and connected with a shorter horizontal one slightly above

the linea temporalis. The teguments, together with the periosteum, are then reflected backward and downward, thus placing the entire mastoid under inspection. If a sinus exists it will be readily discovered, and the operation will consist in simply enlarging this opening.

Formerly trepans were used for perforating the bone, and these were replaced by drills, which are still used by Buck, Jacobi, Lucae, Roosa and others. But, owing to their soiling the wound with splinters, and the difficulty with which they are controlled when advancing in the deep parts, I very much prefer the chisel, as recommended by Schwartz. The drills always seem to me like dangerous instruments; if, unfortunately, the cerebral cavity or one of the sinuses be perforated, it would be almost impossible to avoid wounding the meninges, while, with the chisel, little or no harm would result, as every step of the operation is under the eye of the surgeon. Schwartz very pertinently characterizes the use of the drill, as a "drill into the darkness."* It is generally necessary to administer an anæsthetic, although I have performed the operation several times without doing so.

"The linea temporalis and the more or less strongly developed protuberance on the posterior superior orifice of the osseous meatus, so strongly urged by authors, are very nice guides theoretically, or to point out on an exceptional skull in the class-room, but practically are seldom well enough developed to be of any use to the operator. The best guide is to take the superior wall of the meatus as the upper boundary, and the angle formed by the plane of the mastoid with the posterior wall of the external meatus for the anterior boundary, when opening the mastoid. This is best determined by pressing the fin-

*Frothingham read a valuable paper on this subject before the section on otology of the Ninth International Medical Congress at Washington, in which he very forcibly presented the superiority of the use of the chisel over other methods of opening the mastoid.

ger into the meatus. Often in children, and, when the bone is diseased, in adults, the cortical plate of bone can be removed with the hand-chisel, and we come at once upon the pus-cavity, or diploë, or cholesteatomatous epidermic masses, or a sequestrum of dead bone, or bleeding granulation-tissue, or whatever the case may present. Sometimes the external plate is very thick, and we have to chisel our way carefully for almost an inch before reaching the diploë, or may even find the entire mastoid process sclerosed."

No absolute rule can be given as to the depth it is safe to penetrate. Schwartz says, "Never go deeper than 25 mm." Buck says, "It is better to place the extreme limit at 20 mm.—about three-fourths of an inch."*

Occasionally in old chronic cases the entire mastoid process will be found sclerosed and of ivory hardness. In these cases it is not best to seek for mastoid cells which do not exist, but endeavor to penetrate the antrum mastoidum, and thus reach the middle ear; but even this may be gained only with great difficulty, and, unless there is some obstruction to the free escape of pus through the external meatus, which cannot be removed, it is often best to desist from further attempts to reach the middle ear when this condition is found.

The instruments necessary with which to make this operation are several small bone chisels, some with straight and others with gouged-shaped or curved cutting edges, a bone knife with a concave cutting-edge for enlarging the external osseous shell, a sharp spoon for removing the granulation-tissue, diploë, etc., a couple of retractors for holding back the soft parts, a good, stout scalpel and dressing-forceps, probes, needles, ligatures, etc., such as are found in any pocket instrument-case. Mr. Hessler has made a case containing the above instruments, which is somewhat similar to that used by Schwartz, of

*Baker: Cleveland Med. Gazette, Feb., 1886, p. 168.

which the accompanying wood-cut is a good representation.

In addition to the above, a good syringe will be required, and a carbolized, bichloride, or whatever antiseptic solution the surgeon is in the habit of using. I prefer powdered iodoform dusted into the wound to any other dressing, and, instead of the various drainage-tubes or lead nails so highly recommended by some, I use a simple piece of cloth well saturated with iodoform.

I am aware that this is considered by many a serious operation, and Politzer has said "that no one should operate on the living without having performed the opera-

tion at least forty or fifty times on the dead." Yet I believe that no physician should permit a patient to die from the consequences of acute suppuration of the middle ear without first giving him the benefit of this operation, as the indications for its performance are so imperative.

During the past five years' practice in Cleveland, I have met thirty-eight cases of mastoid disease. It was found necessary to perforate the mastoid process in eight cases. Four cases of fistula of the mastoid were seen. Wilde's incision was made thirteen times, not including the cases in which the mastoid was afterwards opened. One case refused operative interference and I severed my connection with the case. In twelve cases of mastoid perios-

titis, resolution was effected without operative interference.

The following brief report of the eight cases in which the mastoid was opened may not be uninteresting:

Case I. Mr. G., aged twenty. First seen August 23, 1886; old purulent ear trouble since childhood; has been under the care of family physician, during the past three months, for cerebral meningitis. Has suffered from intense headache, vomiting, dizziness, convulsions and facial paralysis; temperature varying from one hundred and three to one hundred and five; large polypus filling the right auditory canal, preventing the escape of purulent discharge from the ear.

August 24—An attempt was made to remove the polypus, but did not succeed in removing all of it.

August 29—Immediately after operation the patient improved and the temperature became normal. The polypus is now almost as large as before, and efforts to remove it not successful; slight rise of temperature, vomiting and patient had slight convulsive movements during the night. Although there was no tenderness or swelling of the mastoid, it was decided to open it, which was done at Charity Hospital to-day. The mastoid cells were found sclerosed, but we were enabled to perforate the antrum mastoidium at the depth of one-half inch; no pus was found, but considerable bloody serum escaped. Dressed with iodoform and poultices applied.

September 10—Patient rapidly improved after the operation, and on the second day considerable pus was discharged; he is now able to visit me at my office.

September 26—Notwithstanding all efforts to the contrary, the opening in the mastoid closed, and on account of pain and a slight rise of temperature, it was decided to reopen the wound, which was done to-day at St. Alexis Hospital. A very free discharge of pus. In the meantime we have succeeded in removing all of the polypoid growths,

which show no tendency to return. The fluids injected into the mastoid opening escaped from the ear freely.

October 6—The patient doing well. From this date, continued to improve, and is now able to do all kinds of manual labor; although there is a slight facial paralysis remaining, which is quite noticeable when he laughs.

Case II. Mr. B., aged twenty-five. First seen October 20, 1885, at Polyclinic, 307½ Ontario street. Has old ear trouble and has had aural polypi removed several times. Offensive purulent discharge from the ear, some pain, and a little tenderness on pressure behind the ear. Leeches applied and hot water injections ordered.

October 28—Treatment has not been carried out; mastoid region enormously swollen; Wilde's incision made, and considerable pus escaped.

October 29—Patient has had convulsions during the night and is now comatose. I opened the mastoid; patient so insensible to pain that I administered no anæsthetic, and he exhibited no signs of consciousness until I commenced injecting fluid into the opening, which, escaping into the fauces, caused him to cough.

The patient, who is a Russian pack-peddler, rapidly improved, and in two weeks started out with his pack, although there was still considerable purulent discharge both from the ear and from the opening in the mastoid. He has never been heard from.

Case III. Miss J., aged seventeen. First seen September 2, 1886. Has had a purulent discharge from the ear since a child. There is a large aural polypus filling the entire meatus, which was removed easily.

December 1—Purulent discharge continues and polypus grows as fast as removed. During the past month I have removed fully a two dram vial full of polypi. Notwithstanding my best efforts, the purulent discharge continues, and patient is complaining of some headache and vertigo.

December 5—Pain and tenderness developed over

mastoid region. Opened the mastoid; there was a free escape of pus; injections did not escape from the meatus.

After this date patient rapidly improved, polypus stopped growing, offensive purulent secretions ceased, and patient was discharged cured January 15, 1887.

Case IV. *Mr. F., aged twenty. First seen June 4, 1886. Present trouble dates from the use of *nasal douche*, about six weeks ago. Patient suffering from intense headache, dizziness, diplopia, vomiting, spasmodic twitchings of various facial and other muscles. Cannot walk alone. Free purulent discharge from the ear, slight tenderness on pressure behind the ear, but no swelling.

June 5—All the alarming symptoms aggravated. Mastoid was opened and a few drops of pus escaped, with immediate relief from headache, etc. Rapid improvement, and recovery in a few weeks.

Case V. Master W., aged nine years. First seen August 22, 1885; has had offensive purulent discharge from the right ear for five or six years. General condition not good, temperature 101, intense pain in ear and head, vertigo, vomiting, large perforation of membrana tympani. No polypi or other obstructions to free escape of pus, considerable swelling and tenderness of the region of the mastoid. Wilde's incision was made and abundance of pus discharged; poultices were applied, but not much relief afforded.

August 26—At St. Alexis Hospital, the mastoid was opened, fistulous opening was found high up—fully half an inch above the external auditory meatus. Upon removing the external plate of bone, a large sequestrum of dead bone was found and removed. Injections passed freely into the fauces, or escaped through the external auditory meatus.

A few smaller pieces were removed after this date, but

* Reported in the Cleveland Medical Gazette, August, 1886, page 468.

the case continued to improve, and at the end of a few months entirely recovered.

Case VI. Baby P., aged one year. First seen January 20, 1884. Enormous swelling behind the left ear, which was opened, and several pieces of loose bone removed, including two small bones of the middle ear. More dead bone was found, but situated so deeply, that it was thought best not to attempt to remove it at that time. In the course of a few weeks, a very large piece became loosened, and, when removed, proved to be a large portion of the temporal bone.

The child rapidly improved and now enjoys good health.

Case VII. Edith R., aged seven years. First seen February 22, 1888. Never has had a purulent discharge from the middle ear, but had inflammation of the mastoid some months previous. There is now a fistulous opening behind the ear, discharging fetid pus. Dead bone could be detected with a probe.

February 25—With the assistance of Dr. Jones, the opening was enlarged and several pieces of dead bone removed, bringing to view the transverse sinus. The *debris* was cleared out as carefully as possible and dressed with boracic acid powder and compress bandage applied. On the next day, there was great swelling of the face of an erysipelatous nature. In the course of a few days, fluctuation was discovered in front of the ear, and considerable pus was evacuated when it was opened. The discharge of pus gradually diminished, but up to the present time, there continues to be a slight discharge from behind the ear. No fœtor. General health good. No dead bone can be felt with probe. The case is still under observation.

Case VIII. Miss W., first seen March 15, 1885. Gives history of old, neglected, purulent ear trouble. Has intense pain in region of mastoid, quite sensitive upon

pressure, but little or no swelling. Wilde's incision was made and no pus found. Pain relieved somewhat, but not entirely. Patient not seen again until April 18. Has suffered intense pain during the past two weeks, has had more or less fever, headache and nausea. Mastoid opened, and large quantity of pus escaped. Was unable to find any connection between mastoid abscess and middle ear. All acute symptoms relieved and has had no return of mastoid trouble, although purulent discharge continues from the ear.

A critical examination of the preceding cases shows that the perforation of the mastoid was rendered necessary in cases one, two and three, owing to the presence of aural polypi, preventing the free escape of pus. In case four, the mastoid disease was due to improper use of the nasal douche. In cases five, six and seven, dead bone was present, as a result of the long-neglected, purulent ear disease. Politzer would class case eight as a primary osseous abscess of the mastoid without communicating with the tympanic cavity, but yet, since there was an old purulent discharge from the ear, it is quite probable that the mastoid trouble was the result of old middle ear disease.

All of these cases, excepting four and seven, presented a history of old purulent ear discharge, which, if properly treated early, could in all probability have been cured without operative interference. Case seven, I think, was primarily an acute inflammation of the middle ear, in which the membrana tympani withstood the inflammatory process, and possibly the whole mastoid trouble might have been avoided by the prompt perforation of the membrane during the acute attack. The same statement may be true of case four, although at the time of the operation there was a large perforation with abundant purulent discharge.

In addition to the foregoing, I have notes of four cases

of fistula of the mastoid process. In one of these cases—a shoe-maker, thirty years of age—both mastoids were involved, and there had been a very offensive discharge from both openings since childhood. His hearing was almost *nil.* Although I had him under treatment for several months, I did not succeed in materially improving his condition, either as to the purulent discharge or hearing.

Another case, a young man of eighteen, had a large polypus growing from the middle ear, completely blocking the auditory meatus. There was a very offensive purulent discharge from behind the ear, which had lasted five or six years. Patient refused to have polypus removed. Three months afterwards he was suddenly taken with a high fever and convulsions, and died in three days comatose. The attending physician pronounced the case typhoid fever! The other cases were younger persons and the fistulous opening had not lasted so long, and under treatment made good recoveries.

Considerable attention has recently been called to mastoid disease as modified by locality.

Dr. Connor, in the American Lancet, says that during a practice of seventeen years in Detroit, he has seen but six cases of mastoid diseases; one of these required an opening of the mastoid to afford an outlet for the pus. Four of the cases recovered after Wilde's incision, and one recovered without any operative procedure.

Dr. Spencer of St. Louis sees few cases of mastoid disease as compared with the aurists of New York.

Dr. Strawbridge of Philadelphia says that out of many cases of purulent diseases of the middle ear, he has never seen a case in which the mastoid needed opening.

Dr. Theobald of Baltimore has never had occasion to open the mastoid cells.

Dr. Roosa of New York, during a practice of twenty-two years, says that he has seen five thousand seven hun-

dred and ninety-six cases of ear disease, in private practice; of these fifty-nine were diseases of the mastoid. Forty-two were operated upon. He made Wilde's incision nine times with evacuation of pus, eleven times without pus.

During the year 1883, Dr. Arthur Hartman of Berlin performed the operation of chiseling of the mastoid in fourteen cases in the polyclinic, while Dr. J. Baratoux of Paris says, "In actual practice I rarely have to resort to this operation."

Dr. Frank Allport of Minneapolis, Minnesota, says that during a practice in that city of five and a half years he has opened the mastoid twenty-five times, always finding pus. The entire number of his ear cases during this period was seven hundred and sixty-two.

Dr. Samuel Sexton, in two thousand one hundred consecutive cases of ear disease at the New York Eye and Ear Infirmary, saw thirty-eight cases of mastoid disease; fourteen of those were periostitis, twelve caries and necroses, and twelve polypus. While these statements made by competent observers go to prove that mastoid diseases are met with more frequently in some localities than others, I think if these investigations were pursued a little farther, it would be found that the number of these cases vary greatly in the practice of physicians in the same locality. In comparison to the whole number of cases of ear diseases, mastoid troubles will be found more frequently in the practice of general practitioners than in dispensary practice.

This is easily accounted for, owing to the fact that this disease is usually an acute, painful affection, and the family physician is first called upon to give relief. The number of cases seen by the specialist will depend largely upon the frequency in which he is called in consultation. The large number of cases seen in certain localities cannot be accounted for by climatic influences

entirely, but are due to the inefficient manner in which middle ear diseases are treated, or rather to the neglect of treatment.

The cases reported in this paper graphically present the truth of this assertion. If not all, nearly all the operations here detailed would have been unnecessary had the middle ear diseases been treated early and intelligently; hence the statement at the beginning of this article that the time may come when the more serious operations proposed in this paper may become unnecessary.

THE VALUE OF EYE SYMPTOMS TO THE GENERAL PRACTITIONER IN DISEASES OF THE NERVOUS SYSTEM.

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The more carefully the physician studies the symptoms of a patient afflicted with disease of the brain, the more thoroughly convinced he must become that there is something necessary to assist him in arriving at an intelligent diagnosis aside from the consideration of persistent pain in the head, dimness of vision and a staggering gait. At present, we would naturally look to the eye for an explanation of many of the healthy functions as well as diseased conditions of the brain. The relation of the eyes to the brain is a very intimate one; not so much on account of the nearness of the two organs, as in the manner in which they are connected.

From the earliest development of the optic nerve and retina in embryo through the entire life, they may be looked upon as an offshoot or projection of the brain, physiologically and anatomically. Next, there are five pairs of nerve trunks leaving the cranial cavity to supply the eye and accessory organs. There is a very intimate relation between the arterial and venous systems; and, lastly, the connection of the arachnoid space of the brain with the lymph spaces of the eyeball and the subvaginal spaces surrounding the optic nerve itself. This ready in-

terchange of fluid between the cranial cavity and the eye-ball has cleared up the etiology of many diseases of both organs hitherto not understood. (Schwalbe.)

Is it not readily comprehensible that these intimate physiological and anatomical relations may bring about a chain of symptoms on the part of the eye in disease of the brain of great importance from a diagnostic and prognostic point of view, if correctly interpreted? The situation of the brain, surrounded as it is by a bony covering, made it exceedingly difficult to study even its most simple functions, to say nothing about the changes produced by pathological processes.

Is it to be wondered at that the ophthalmologist regards the invention of the ophthalmoscope as a great epoch? Certainly, physiology has few greater triumphs. "With it, as it were, we walk into nature's laboratory and see the Infinite in action. We are enabled to look upon the only nerve in the whole body which can ever be open to our inspection under physiological conditions. It not only gives us an opportunity to study the circulation from its entrance into the eye through the arteries to its exit in the veins, but we can observe daily, hourly, changes in the circulation caused by morbid processes in the brain, kidney and spleen."

In fact, the ophthalmoscope is in its department as much or more than is the stethoscope and auscultation in disease of the heart and lungs. It is beautiful, perfect and accurate in the hands of an adept.

Though it requires skill to use it in its widest sense, yet, if every physician who used the microscope had to be a Virchow, or, who used the ophthalmoscope, a Helmholtz, our patients would certainly be objects of pity. It will require skill and practice in its use to recognize some of the symptoms to be detailed in this consideration; yet a number of symptoms of great importance from a diagnos-

tic stand-point are of such a character that they can be easily recognized and comprehended.

If we refer very briefly to the anatomy of the connection of the eye with the brain, it will be in the way of recapitulation. The blood-supply to the eye is from the ophthalmic artery—a branch of the carotid, given off in the cavernous portion.

The nerve supply—motion, sensation, nutrition and special sense—is complex and thorough. The nerves of motion and sensation, from their deep origin, in their course along the base of the brain until they enter the orbit and are properly distributed, are often exposed to numerous pathological processes that may destroy their function.

The optic nerve is practically an extension of the brain forward, with all of its coverings, into the orbit, and its terminus, the retina, will show the various changes from a simple hyperæmia to absolute stasis.

Disturbances in the brain may result in complete loss of vision by the cause acting the same on both organs. (Mauthner.)

An embolus may enter the central artery of the retina and cause one side blindness, while at the same time an embolus has entered the sylvian artery and caused aphesis; one is not caused by the other, but both processes originate from a common cause—possibly disease of the heart.

In another class of cases the symptoms do not refer so much to the function of the eye, but more to the appearance of the retina and the intraocular extremity of the optic nerve, and the intraocular blood-supply. In this category the two conditions, known as neuritis ascendens and descendens, are of the greatest interest. In the first condition, stau-ungs papilla of von Graefe, the optic nerve entrance has a peculiar grayish-red appearance, quite elevated above the surrounding structures. The physiological boundaries of the disk are gone; neither the sclerotic nor choroidal ring is visible. The main branch

of the central artery is, as a rule, covered by the swelling and exudation of lymph, while some of the smaller divisions are just perceptible as a red line through a hazy mass. The arteries are not increased in size, while the veins are enlarged and very tortuous, and occasionally disappearing from our view, and just as abruptly reappearing, giving to the vessels a distinctly interrupted look.

Space will not permit that we enter into the theory as to how a so-called chocked disk is produced. It is sufficient to state that by the increase of intracranial pressure we produce a hydrops vagini nervi optici.

The entrance of fluid into the subvaginal spaces from the arachnoid spaces of the brain is checked at the entrance of the nerve into the eyeball by the firm scleral ring. The compression that naturally follows to the optic nerve and blood-vessels at this point produces the symptoms above briefly mentioned. Let us now contrast with this the picture of a neuroretinitis, or a neuritis descendens. The optic papilla is generally somewhat swollen and hazy in appearance. The boundary of the disk may be lost and the haziness extend into the retina around the optic nerve. Distinct, white striations are always seen extending from the papillæ into the retinal structure, while yellowish-white plaques may be visible in the retina. The arteries are straight, and appear attenuated; the veins are tortuous and enlarged. This disease may be termed a neuritis medullaris. (Leber.)

In the former instance blindness is brought about by the continuous pressure on the ocular extremity of the optic nerve and the compression of the blood-vessels as they enter the eyeball, while in the latter instance the separate fibres of the nerve are undergoing the changes consequent upon an inflammatory process that is extending from the brain to the eyeball. A fibrinous exudate into the subvaginal spaces becomes organized in a connective tissue, and by its contraction causes atrophy

of the optic nerve. The value of the first symptom is apparent when we analyze the report made by Annuski and Reich of the eighty-eight cases that came under their observation of brain tumor. In eighty-two of this number, neuritis of some character was present in both eyes. Mauthner insists that this symptom is exaggerated in importance and frequency. He* reports a case of an enormous gliosarcoma, where all brain symptoms, as well as optic neuritis in the opposite eye, were absent. From this we must conclude that, even though optic neuritis or chocked disk is absent, a tumor may exist, but when these symptoms are present, we may think of the existence of brain tumor, yet remember that abscess, meningitis, encephalitis, etc., may bring about the same symptoms. Noyes and Hughlings Jackson each report an instance where bilateral atrophy followed an optic neuritis, with all of the indications of a coarse lesion of the brain, while the post-mortem examination failed to verify the ante-mortem diagnosis. This report is not intended to lessen the value or importance of the chocked disk. Its presence indicates a brain tumor, or a condition of the brain, if found in connection with the other symptoms, that will cause death sooner or later; its absence in the same case may not signify anything. The ophthalmoscope does not show the location, variety or size of the neoplasm.

Finally, we want to make a few general remarks relative to the connection between diseases of the eye and brain where one common cause is the source of disturbance in both organs. In tabes dorsalis or disseminated sclerosis of the brain, the atrophy of the optic nerve is not due to a central disturbance, but is only a manifestation of the disease on that given portion of the nervous system.

The amaurosis observed during an attack of cerebro-spi-

* "Wiener Med. Press," 1878.

nal meningitis is caused by the same infectious material implicating at the same time the vascular system of the meninges and the choroid. In the latter instance there results a cyclo-choroiditis, whose etiology is the same as that of the cerebro-spinal meningitis. ("Volkmann's Vorträgege," Berlin, 1880.)

The chain of symptoms furnished by the implication of the nerve trunks in the various morbid processes above mentioned, that supply the intrinsic and extrinsic muscles of the eye, are of great significance when taken into consideration with the other symptoms.

But the appearance of paralysis of one or more of the ocular muscles does not enable us to predict the nature of the morbid process nor localize its seat with any degree of certainty, since the nerve trunks run in such close proximity to each other.

Paralysis of one or more of the ocular muscles in otherwise perfectly healthy children, when there are no symptoms calling attention to the central nervous system, is a very ominous sign. The patient complains of seeing double, and this very symptom may be present for weeks, the precursor of tubercular meningitis. If we rule out rheumatism and diphtheria in these cases, we can make our prognosis with almost mathematical precision, viz.: that tubercular meningitis will soon follow.

In the adult, paralysis is not so characteristic. In the large majority of cases it is due to syphilis—some one of the nerve trunks are affected in their course from their origin to their termination. A curious observation is, that while the agent causing rheumatism not infrequently also causes paralysis of one or more ocular muscles, yet it never causes paralysis of the abducens or external rectus. If all indications seem to point to some other etiological factor, the danger is great of making a mistake. In a majority of cases, if they can be kept under observation, we will find, in possibly the course of years, other

symptoms of tabes appearing. The abducens nerve is nearly always involved; the paralysis may be but very slight, remain but for a short period, disappear, and in course of a few weeks or months reappear in the opposite eye. On the other hand, complete paralysis of the abducens and rapid secondary contraction of the internal rectus muscle, causing a kind of squint, resisting all operative interference, is the other picture.

The premonitory symptom of progressive paralysis usually manifests itself by a paresis, sometimes multiple, sometimes bilateral, temporary in character, not infrequently involving another set of muscles, and finally disappearing entirely.

When associate paralysis occurs, so the eyes cannot be turned towards the right or left, involving the right external rectus and left internal rectus, one can infer that the cause is central and very circumscribed. At the deep origin of the abducens, in the floor of the fourth ventricle, a small bundle of fibres cross over to the opposite side to the oculomotorius. (Duval, 3, 4.)

Féréol observed a case with the above symptoms, and, when the post-mortem was made later, he was able to verify his diagnosis by finding in the floor of the fourth ventricle a tumor the size of a small nut.

Paralysis of the sympathetic causes contraction of the pupil on the same side of the pathological process. There is probably no other single symptom so frequently noticed in pathological conditions of the central nervous system as the mobility or immobility of the iris. It is a condition so easily noticed and so often described, but only too infrequently of any pathognomonic significance in a differential diagnosis.

Gastiglino found among one hundred and forty-six insane patients, seventy-five per cent. with an abnormal condition of the pupil. Nasse puts the percentage a little lower, namely, at sixty-four per cent.

To understand the cause of the frequency of this disturbance, it becomes necessary to briefly refer to the mechanism of this act. The iris contains a set of radiating and circular muscle fibres; the former are supplied by the sympathetic nervous system, and the latter receive their supply from the oculomotorius. Stimulus of light and the act of accommodation, each causes a change in the size of the pupil physiologically. Light entering the dilated pupil, striking the retina, a nervous impulse is transmitted along special nerve fibres found in the optic nerve to its deep origin, where there is a connection with the nucleus of the oculomotorius; the impulse has now been translated into motion and passes along this nerve to fibrillæ, enervating the sphincter of the iris, and the result is a contraction of the pupil.

This is a delicate mechanism, and its disturbance can be caused in many ways. The retinæ may become insensitive to light; the optic nerve fibres may not transmit the stimulus; the connection between the nucleus of the oculomotorius and the deep origin of the optic nerve in the floor of the fourth ventricle may be broken, or the motor impulse is prevented from passing along the third nerve. This fully explains the reason of its frequency. Now as to its value.

In apoplexy the pupils may be contracted or dilated, and it is not uncommon to find a difference in the size. (Flint's "Practice," p. 607.)

In hysterical coma the pupils contract and dilate to the stimulus of light. (Flint's "Practice," p. 610.)

In alcoholic coma the pupils are dilated. (Flint's "Practice of Medicine.")

The pupils are somewhat dilated in chorea. (Juergen's "Pathology and Therapeutics.")

In œdema of the brain the pupils are dilated, and though they contract when stimulated, the action is slug-

gish in proportion to the degree of intracranial pressure. (Juergen's "Pathology and Therapeutics.")

Paralysis of the insane is quite often announced, as it were, by the difference in the size of the pupil for some time prior to the appearance of any nervous symptoms. There is no doubt that pupillary difference with paralysis of accommodation in the same eye is a prodromal symptom of the mental condition that develops later. (Föerster, Graefe and Saemisch.)

The statement made by H. Austin, that there is a certain connection between the side of the body on which the motor disturbance of the iris is found and the delirium, that an affection of the right pupil indicates melancholia, while if the left pupil is involved, the symptoms are of a maniacal character, is fully contradicted by Nasse. Where the pupils are somewhat dilated, it is probable that the cause is found to be an irritation affecting the cilio-spinal centre or the sympathetic nerve. If myosis is present in mental disturbances or acute mania, we are quite safe in predicting the appearance of general paralysis in the near future. (Seifert, "Molilitäts Sörung bei Journ.," 1853.)

In tabes dorsalis the pupils are involved in more than one-half the patients. (Cyon, 1867.)

The pupils are nearly always contracted when involved, which is due to changes in the cervical and upper dorsal region of the spinal cord. The stimulus of strong light does not cause the pupil to contract more minutely, nor does shutting out the light by means of the hand cause but little dilatation. (Knapp, "Arch f. Augen.," Vol. II.)

In neoplasms, situated so as to involve the cervical sympathetic, the condition of the pupil is often a valuable diagnostic symptom.

Wildebrandt reports a case where a lymphosarcoma of the neck caused one-sided myosis.

Dubois Raymond is the author of the theory that many cases of migraine are due to a vaso-motor neurosis, often

showing marked symptoms on the part of the eye with one-sided myosis.

During the convalescence from febris recurrens there is not infrequently a difference in the size of the pupils; the connection with the constitutional disturbance is not known. (Peltzer.)

One-sided contraction of the pupil appears at the onset of hemicrania, especially noticeable when the eyes are shaded, while the pupils react alike to the stimulus of light. (Fraenkel, 1874, "Pathology of the Cervical Sympathetic.")

One of the most important symptoms of gliosarcoma is extreme dilatation of the pupil. (Leber.)

In complete narcotism the pupils are contracted. (Flint's "Practice.")

In pachymeningitis the pupils are persistently contracted during the early stages. Should the hæmatoma be one-sided, the contraction would be greatest on the side corresponding to the seat of disease. (Flint's "Practice.")

In acute cerebral meningitis the pupils may be either dilated or contracted in the last stage; in either case their respondency to light is lost. The condition of the pupil is often a valuable symptom when we are called upon to differentiate between tubercular meningitis and typhoid fever in children. In the second stage of the former disease, the pupils are always contracted, and there is a great deal of sensitiveness to light. (Flint.)

If we suspect abscess or non-inflammatory softening of the brain, and the pupils should be dilated, it is a sign that the region of the brain from which the fibres spring enervating the iris is involved.

Contraction of the pupil is not of so frequent occurrence as dilatation. Cases are reported of tumor, abscess, aneurism, and contracting scars in the region of the neck causing myosis, often one-sided, by causing irritation by pressure on the cervical sympathetic.

In spinal paralysis the progress of the disease may be noticed by the rapidity with which it reaches the region which disturbs the mobility of the iris.

Toxic doses of quinine may cause widely dilated and fixed pupils, with blindness. ("Sitzungsbrircht, Ophthal, Gesell," 1881, Heidelberg.)

Of the few cases of carbolic acid intoxication reported, Falkson states, the pupils are always contracted. (Salin, *Texas Medical and Surgical Record.*)

The effects on the pupil in tobacco and alcohol amblyopia is to cause a wide dilatation, which reacts very little to any of the tests. The condition of the pupil and paralysis of accommodation in the toxic effects of alcohol are due to the same cause as paralysis of the ocular muscles. In epilepsy the pupils are irregular in about one-half of the cases.

In cases of hysteria where epilepsy is simulated, it is well to bear in mind that (Fere, *Gaz. Med.,* Paris) the pupils in true epilepsy are contracted during the tonic contraction of the muscles, and dilate during the time of the clonic convulsions.

Before leaving this subject, we must say that the pupillary symptoms are not studied with as much interest now since we can see the fundus, but if taken in connection with diseases of the fundus or functional disturbances of vision, it is a valuable diagnostic aid. The neurologist of to-day recognizes this fact. (Rembold, "Uber Pupillar bewegung und Ihre Bedentung bei den Kerankheiten des Central Nerven System.") (J. Leeser, "Pupillar bewegung in Physologicher und Pathologischer Beziehung.") These monograms consider this most thoroughly.

Complete myosis can take place only where there is spasm of the oculomotorius and paralysis of the sympathetic; acting separately, contraction is not complete. The same holds good of a dilatation of the pupil. We must have a contracto-paralytic action for maximum

effects. In Pott's disease, high up we most seldom notice mydriasis; there there is only an irritation present, but should there be a contraction of the pupils, there certainly is a destruction of the spinal cord.

In basilar meningitis we have, with the onset of the disease, a contraction of the pupils; later the pupils become larger, are irregular in size, and their reaction to light is lost.

One-sided total intracranial amaurosis, with dilatation of the pupil, loss of reaction to light, indicates a loss of function of the optic nerve between the chiasm and the orbit.

The pupils are widely dilated in commotio cerebri, due to anæmia of the brain (Jacobson), while in hyperæmia of the brain the pupils are minutely contracted.

We have refrained from giving the cause of the condition of the pupils in these citations, since it would lead us from our subject.

Brain tumor, whatever its nature, may, according to its seat, size and development, cause a change in the size and function of the pupils, but we seldom can make use of this system to localize the seat of disease; therefore a mere reference is sufficient.

Let us briefly turn our attention to some of the more frequent diseases of the nervous system, and analyze the most important symptoms. . In simple as well as cerebrospinal meningitis, the symptoms on the part of the eye are, undoubtedly, due to a direct extension of the inflammatory process from the membranes of the brain to the sheaths of the optic nerve; and since the publications of Schwalbe, this process is not difficult to understand. It may even cause swelling or chemosis of the conjunctiva. In the latter stages of the disease, paresis of the orbicular muscles prevents a complete closure of the eyelids. The iris and choroid may become involved by an extension of the inflammation, involving, subse-

quently, the retina and optic nerve; later, paralysis of the muscles supplied by the oculomotorius and abducens, producing such symptoms as ptosis, strabismus, loss of accommodation, caused by the exudate which is found at the base of the brain, are common. The largest number of cases losing vision completely is found to be children under the age of five. Neuritis is rare in this disease, while atrophy of the optic nerve may occur due to a pressure from the exudation at the base of the brain. If reabsorption can be brought about before pressure has damaged permanently the nerve trunk, vision may become restored again. So long as the pupil reacts to the stimulus of light, there is always hope of restoring the function of the optic nerve, although this symptom is of less value in meningitis than any other disease.

According to Leyden, the appearance of chemosis of the conjunctiva is one of the first and most constant symptoms of purulent meningitis, and will often assist the physician in making a correct diagnosis. Tabes dorsalis, or grey degeneration of the posterior columns of the spinal cord, is often accompanied by eye symptoms. Referring to the optic nerve, paralysis of the extensor ocular muscles, and the mobility of the iris, our conclusions cannot be absolute, yet the peculiarity of the symptoms is of special value. Charcot states the amaurosis is not infrequently for years the only symptom pointing to beginning tabes, when finally excentric pains, partial anesthesia of the skin, dizziness, etc., develop rapidly. Blindness nearly always begins by a contraction of the field of vision, leaving a small central point of fixation, giving the patient often for years practically good vision, even though the optic papilla appears quite white and atrophied. If vision disappears by a central scotoma, we may rest assured the cause is not tabes. Among the subjective symptoms there is possibly none more striking than the gradual loss of the color sense, especially green

and red. Secondly, the patients always see better in twilight, while bright sunlight is very annoying. The atrophy is progressive to complete amaurosis, and though it usually extends over a series of years, nothing can be done to check its progress. The patient is cheerful, and not in the least concerned about the state of his vision.

Diplopia, caused by paresis of some one of the ocular muscles, of a transient nature, is one of the most constant prodromal symptoms to tabes. The peculiarity about the paresis is that it comes and goes, first affecting one and then another muscle. These symptoms cannot be explained by the pathological process going on in the spinal cord, but there must be some disease in the floor of the fourth ventricle affecting the fibres of the nerves of motion. If the pupils are affected at all, they are contracted.

In sclerosis of the brain, the eyes are affected in more than one-half of the number of cases. Occasionally white atrophy of the optic nerve can be demonstrated, but the peculiar nystagmus attending these cases is of great importance in diagnosis. The muscles of the eyeball are affected similarly to the muscles of the extremities in paralysis agitans. We may also (Charcot) have complete paralysis of some or all of the eye muscles. Föerster (Graefe and Saemisch Handbuch), Northnagel (Ueber epileptische Anfälle), who has studied the effect of the epileptic attack on the eye in a large number of cases, draws a few valuable conclusions, viz. : At the onset of an epileptic seizure the pupils dilate, the face becomes bloodless and pale, caused by an irritation of the cervical sympathetic. The fundus of the eye has never been satisfactorily examined during a seizure. In a limited number of cases atrophy of the optic nerves has been reported, but it seems safe to say when this condition is present there is some coarse lesion of the brain the cause of both epilepsy and atrophy.

Considerable interest has been attached to the loss of color sense in one or both eyes. As a symptom in diagnosing certain diseases of the brain, it can at the present state of our knowledge be of value when taken in conjunction with all the other symptoms only; there need not be a defect in the vision to show a defect in the color sense. In atrophy of the optic nerve it is quite common to notice a defect for green and red long before the acuteness of vision is even diminished, while the ability to recognize blue and yellow is lost subsequently. Green is the first to be disturbed, and while there is a difference in the development of this defect in the various forms of atrophy, our information is as yet too indefinite to use it in any manner except in conjunction with other symptoms. The field of vision in diseases of the brain is of little value from a diagnostic point of view. Vision may be acute, even though a chocked disk, headache, vomiting, epileptic seizures—in short, all the symptoms indicating a brain tumor—are present. In tabes dorsalis the amaurosis nearly always begins by a contraction of the field of vision outward and below; while in tobacco and alcohol amblyopia and retrobulbar neuritis, the defect in the field of vision is central, and the scotoma extends as the disease progresses. As a rule, the acuteness of vision is not much disturbed in chocked disk; the exudation of lymph does not seem to have a bad effect on the optic nerve fibres. Should sudden blindness, temporary or permanent, set in, the cause is certainly cerebral, and so soon as it yields, vision may return. This is often the state of things in gummata of the brain. If the compression is continued too long at the scleral ring, it causes intraocular atrophy and subsequent blindness. Where we have an altered condition of the field of vision we are safe in saying there is also a loss of the acuity of vision. If the field contract more on one side than on the other, it is likely that a certain segment of the nerve

is degenerating. In the large majority of instances of brain tumor, abscess, amaurosis, etc., there is a concentric contraction of the field of vision. The arrangement of the optic nerve fibres in their course from the brain to the eyeball is not definitely known; therefore it is difficult to state what portions of the nerve are involved when we have a central scotoma.

A CASE ILLUSTRATING THE RELATION EXISTING BETWEEN DISEASES OF THE EYE AND NOSE.

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Common experience, as well as physiological investigation, has long ago made known the reflex nervous relation existing between the schneiderian membrane and the eye.

The fact that catarrh, in many instances, affects the eyes, causing lachrymal obstruction, conjunctivitis, and so forth, and, on the other hand, that certain affections of the eye may cause disease of the nose, has long been recognized and made use of in determining the proper line of treatment in diseases of these organs. But it is of late years, since more accurate methods have been applied to the study of diseases, both of the nose and eye, that more careful work has been done in this line, and some very satisfactory and interesting results have been obtained.

Hyperemia, or congestion of the eye, if frequently excited or long maintained, not only predisposes to inflammatory affections of that organ, and, when established, owing to some other cause, aggravates the symptoms and interferes with the success of treatment, but also gives rise to certain disturbances of function, especially in maintaining accommodative effort.

The recent reports of many investigators establish beyond reasonable doubt the practical importance of recog-

nizing in our treatment the relation existing between nasal and ocular affections.

Some cases reported, and results of treatment obtained, are truly surprising, leading the incredulous to shake their heads, but, after making allowance for the undue enthusiasm of those prone to go to extremes in therapeutic methods, there remains the indisputable fact that, in a large number of cases, success in treatment is only attained when the above-mentioned relation is recognized.

The two following cases are striking illustrations of this statement. They occurred recently in the practice of Dr. Bates of New York, and were related to me by Dr. Brown of this city, who saw them while they were under treatment at the clinic of the New York Post-Graduate school.

The first was that of a little girl about twelve years old, who presented symptoms of hypermetropia, corrected by a glass of about 1-24, with marked spasm of the accommodation. The diagnosis was confirmed by an ophthalmoscopic examination, but in adapting glasses great difficulty was experienced in overcoming the spasm of the ciliary muscle.

The use of atropine failed when maintained for a long period, and even when leeches were applied only temporary and partial relaxation followed, vision being only 20-40.

Examination of the nares revealed no enlargement of the cavernous tissue over the turbinated bodies, or other condition which in itself would require treatment, but when cocaine was applied to the nasal mucous membrane, the ciliary spasm relaxed and vision was brought up to 20-20, making the adjustment of glasses possible.

Here, in the absence of a pathological condition of the nares, we may assume that the normal physiological relation which exists between the vaso-motor nerves of the nose and those of the eye is sufficient to account for the esult.

Vaso-motor excitement in the ciliary region, causing spasm of the ciliary muscle, was relieved by a means which reduced vaso-motor activity in a neighboring and closely related nervous area.

I am not prepared to say whether the same result might not have been obtained by the use of some other means; as, for instance, some mild astringent applied in the same way. And it is probable that the nervous action is of the same general nature as that obtained when we allay irritation in the eyes by bathing the face with cold water.

I have, by spraying the nares with a solution of cocaine, succeeded in allaying smarting and aching in the eyes, accompanying accommodative effort, even in a case where there was a considerable degree of conjunctivitis. And in a case of severe pain in the eye, due to a corneal ulcer, which had resisted the continuous local application of atropine and cocaine, I was able to produce immediate relief by simply spraying the nares with a two per cent. solution of cocaine; and, once subdued, the pain was easily controlled by the ordinary means.

In those instances in which there exist pathological changes in the nares, as in hypertrophy of the turbinated bodies, or increase in the cavernous tissue overlying the turbinated bones, or where, from some cause, ulceration exists, permanently good effects in eye treatment are often obtained by the means which relieve these conditions.

The following case, also occurring in Dr. Bates' practice, illustrates this:

A man of about fifty-five years of age had been under treatment for a long time with chronic, progressive choroiditis. The choroidal changes were marked and vision was greatly reduced, being only 15-200 in the better eye.

Under the "mixed treatment" (bichloride of mercury and iodide of potassium), no improvement was noted. Examination of the nares revealed the fact that the tur-

binated bone of one side was bent at a sharp angle and projected almost to the septum, so that slight engorgement of the overlying membrane brought it in contact with the septum.

Application of a pledget of cotton saturated with a solution of cocaine causing the cavernous tissue to contract, and producing temporary improvement in vision, the projecting body was removed, and as the cut surface gradually healed, there was steady improvement in vision until after about six weeks it had increased to 15-30.

It is of course to be borne in mind in considering this case, that, though the internal medication and local treatment to the eye had not, up to this time, appeared to produce any good effects, it is barely possible that their continuance may have had some influence in bringing about the result.

The case that I have to report from my own practice illustrates the same general principle of nervous communication between these regions, though the effect upon the eye was quite different.

Mr. L., aged thirty-seven, a mechanical engineer, applied to me on February 7, 1888, complaining that he had been annoyed more or less for many years with lachrymation on exposure of the eyes to cold air. This had been more troublesome for a few weeks immediately preceding his visit, and much more marked in the left eye than in the right. On examination I found a scalded appearance of the left lower lid and cheek, a slight chronic conjunctivitis due to the almost constant presence of tears, and the usual uncomfortable symptoms were complained of which are apt to accompany stillicidium.

Noticing a deformity in the nose, with a marked deflection to the right at the junction of the nasal bones with the cartilage, I made inquiry and elicited the history of two heavy blows, one at the age of twelve and the other about ten years ago, when he was struck violently on the

nose with some hard substance, which crushed the lower portion of the left nasal bone and drove it in, pressing the right bone over to the right side. The attempt to rectify this at the time had not been very successful, and my natural impression was that I had to deal with consequent narrowing of the bony portion of the lachrymal canal.

This, however, proved not to be the case. Inspection of the lachrymal punctæ revealed the fact that they were narrowed and almost closed. They were probed and dilated, but this gave only partial relief.

Examination of the nasal fossæ revealed a marked deviation of the cartilaginous septum to the left, almost entirely occluding the left nostril.

The bony septum was also found to be bent somewhat to the left in its lower portion, and on looking into the mouth it was seen that the vault of the palate was high and rather narrow, a condition which is supposed to have a causative relation with deviation of the septum.

The large right nostril, as is often found in such cases, was in great part occupied by the hypertrophied turbinated bone, with its covering of soft, yielding, cavernous tissue and mucous membrane; this compensating, in a measure, for the undue size of the nostril, and possibly preventing, to a degree, the evil consequences which follow too great capacity of the usual fossæ.

In the left nostril I found the mucous membrane covering the septum ulcerated and very irritable at the point where it was in contact with the atrophied turbinated body.

This irritable, ulcerated surface, or, more probably, the pressure on the turbinated body, was, as I believe, the cause of the undue secretion of the tears and the resulting conjunctivitis, even though the irritated surface was not near the nasal orifice of the lachrymal canal. Certain it is that the symptoms disappeared when the turbinated

body was relieved of the pressure, even before the ulceration was healed.

Hypertrophied and irritable cavernous tissue, which has been found by various writers associated with, and as a cause of, eye disease, could not be the cause here, as actual atrophy was present, apparently, as a result of pressure.

Relief was obtained by so far straightening the septum as to avoid contact with the turbinated bone, and thus re-establishing the left nostril, which had been almost occluded. This I accomplished with Sajous' modification of Adams' punch and forceps combined, by means of which I overcame the resistance of the cartilage of the septum by a number of punctures and then, removing the cutting blades, used the same instrument to break down the septum and press it forcibly over into its new position.

To maintain the septum in place, instead of the ivory or hard-wood plugs recommended by most authorities, found great advantage from the use of cork.

By burning a hole through the long axis of a carefully shaped piece of cork, it was made more yielding and served the purpose admirably.

The perforation allowed freer breathing than had taken place for years through that side, and greatly lessened the discomfort arising from the presence of the plug.

From the above described cases, which merely serve to corroborate the evidence given by others who have written on the subject, I think we may fairly conclude that in allaying irritation of the nasal mucous membrane we have a means of combating a variety of forms of eye disease and obtaining good results in many cases which have heretofore proved very obstinate.

THE TREATMENT OF UTERINE FIBROIDS BY THE APOSTOLI METHOD.

BY A. B. CARPENTER, M. D., CLEVELAND, OHIO.

The treatment of uterine fibroids by the Apostoli plan or method has come forward so prominently of late, and the claims for the success of this plan are so positive, that I desire to call attention to what is being done in this direction to ameliorate the sufferings of this class of cases without resort to the knife, and at the same time offer a few suggestions based upon practical observations.

In 1885 Mr. Moore Madden of the Rotunda Hospital, Dublin, read a paper before the British Gynecological Society of London, wherein he stated, as his opinion, that if we could carry these fibroid cases on to the menopause, in a great majority of instances the troublesome symptoms will disappear and a permanent relief be afforded; that during the menstrual life the tumor annoys, but, as a rule, does not kill, and that with cessation of ovarian activity the growth gradually reduces in size, the aches and sufferings pass away, and life again becomes worth living. He showed by statistics, which I take the liberty to quote, that the mortality arising from the operation for hysterectomy is from twenty-five to thirty-five per cent., in the hands of the best operators. He says: "Mr. Lawson Tait published in the same year (1885) an account of fifty-four hysterectomies, with nineteen deaths; Dr. Keith thirty-eight cases, with three deaths; while Dr. Bigelow collected from all available sources three hundred and fifty-nine cases, with one hundred and thirty-two deaths." At

this time Mr. Lawson Tait was in the height of his glory, and was performing the operations for oöphorectomy and hysterectomy upon nearly every patient that came under his care afflicted with uterine myoma. The paper attracted a great deal of attention and discussion, and very emphatic opposition from Mr. Tait, as Mr. Madden declared that the mortality under the non-operative plan of management was so low as to be hardly worth recording. The paper can be found in the 'Transactions of the British Gynecological Society,' Vol. I., page 139, and is well worth reading, as it marks the beginning of protest, on the part of the conservative element in the profession, against the indiscriminate use of the knife in the treatment of these cases. At about this time Apostoli began to advocate more strongly his method. It may be claimed that electrical treatment for the cure of uterine fibroids was in use, and by men in this country, long before Apostoli was known. This is granted, but how was it used? By some, the continuous or galvanic current was applied; by others, the faradic, and through the medium of machines that were as but mere toys in accomplishing electrolytic action, with little or no knowledge as to the therapeutics of the current, no positive or even well-defined idea of what they wished to accomplish, and an absolute ignorance of the strength of the current administered. The treatment was purely empirical, wholly unscientific, applied with the vague hope that by a certain something, they knew not what, beneficial results to the patient were to be obtained. Quacks and charlatans imposed upon an always credulous public with their toy batteries and clap-trap apparatus, and it is not to be wondered that the subject of electricity became almost as a stench in the nostrils of the better class of practitioners.

To Apostoli is due in a great measure the credit of having come forward and lifted the subject from the quagmire and domain of quackery, and placed it before the

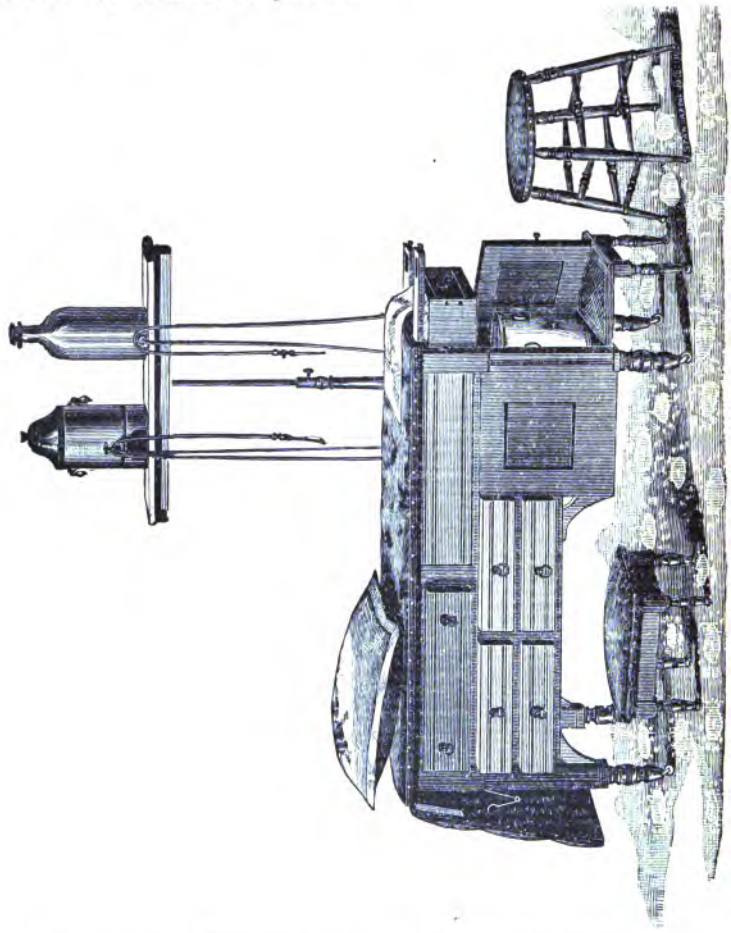
profession on a plausible basis and in a scientific light—plausible, because we can see our way to the establishment of electro-therapeutics prescribed on the basis of exact dosage; scientific, because, by understanding the physiological action of the positive and negative poles, we are enabled to intelligently use them, and with a reasonable assurance of success.

What are the claims of Dr. Apostoli regarding the treatment of uterine fibroids by the electrolytic method? I will quote him. 1. Hemorrhage is controlled. 2. The troubles of menstruation, dysmenorrhœa and nervous disturbances are relieved. 3. The direct pains in the growth and pains arising from mechanical pressure are removed. 4. The harassing series of reflex pains, rectal and vesical, is destroyed. 5. The tumor is, in a majority of instances, made to entirely disappear. 6. The treatment is simple, anyone in possession of the required apparatus being able in a short time to administer it. 7. The mortality following this method is *nil*, providing the directions for operating be faithfully carried out. 8. Relief of symptoms in some cases must be accepted in lieu of cure.

Before going on to the consideration of important points in treatment, attention is called to the action of the positive and negative poles, familiar to many, yet pertinent in this connection. 1. The positive pole has styptic or anti-hemorrhagic properties, and should always be used to control hemorrhage or uterine leucorrhœa, the electrode being used intrauterine. 2. The positive pole has marked anodyne properties, and should be used when it is desired to produce this effect. 3. The negative pole should always be remembered as the caustic. 4. The negative pole has marked electrolytic action, and should always be used after prominent symptoms are relieved, as it is under the influence of negative galvanism that the tumor is made to reduce in size.

PRACTICAL OBSERVATIONS.—1. Antiseptic precautions.

2. Evidence of pelvic inflammation. 3. Is the tumor very sensitive to pressure? 4. General temperament of the patient. 5. Electrical dosage. 6. Frequency of treatment. 7. Control of patient.



ANTISEPTIC PRECAUTIONS.—If antiseptic precautions are of any avail in the department of medicine or surgery, they should certainly be made use of here. Vaginal irri-

on before and after treatment I believe imperative.

For convenience in making this irrigation, a table, devised by myself and here illustrated, will be found not only useful but very convenient; the working is readily understood by reference to the cut.

Sublimate 1-2,000 is used, and the vagina filled with dry antiseptic cotton for twelve hours.

EVIDENCE OF PELVIC INFLAMMATION.—Should there be evidence of pelvic inflammation of acute or subacute form, great care must be observed in the beginning of the treatment; the electrode should be introduced with great care and gentleness, and a small number of milliampères of current given; otherwise we shall find ourselves with a case of cellulitis on hand, our patient discouraged and worse than when she came. It is now my practice to give a few treatments by simply applying a sponge electrode through a glass speculum directly to the cervix, giving positive galvanism to the number of fifty or sixty milliampères. By this method a double purpose is accomplished.

1. The patient becomes accustomed to the current and to her new medical attendant, her fears become allayed, and she is in much better condition to endure the more heroic methods that are to follow. 2. Pelvic pains resulting from inflammatory disturbances, and the neuralgic, so called, are very much benefited by positive galvanism from a current of high tension applied as above described three times each week. It is my custom to give ten-to fifteen-minute sittings, of from forty to sixty milliampères, being governed by the patient's feelings; in no case, however, should a current be employed so strong as to produce an aching or burning pain in the pelvis.

After a fortnight an attempt is then made to introduce the platinum electrode into the uterine canal, and a small number of milliampères—five to ten—given. I gradually feel my way and increase the dosage according to the toleration of the patient.

IS THE TUMOR VERY SENSITIVE TO PRESSURE?—If we find the tumor very sensitive to pressure upon examination, thus giving the patient considerable sharp pain, the duration and frequency of the treatment must be modified accordingly, the intervals between the sittings to begin with longer, and the dosage lighter, the action of the negative pole being such as to produce congestion in the growth, and thus tend, if not gently managed, to set up inflammation. Cases of this kind should be given sittings of not longer than five minutes, of a frequency of twice a week, and a dosage of not to exceed ten milliampères at first treatment.

GENERAL TEMPERAMENT.—Every physician who has had occasion to treat diseases peculiar to women has no doubt noticed what an influence temperament has on the progress of these cases. Women of high-strung nervous temperament have to be handled with much gentleness; they have a horror of instruments, and their uteri bear the sound badly.

In these cases galvanism must be proceeded with in a cautious manner, if we expect to gain the confidence of and secure coöperation on the part of these patients.

ELECTRICAL DOSAGE.—*The system of electrical dosage, as advised by Apostoli, is, for the average American woman, in my opinion, too high.* This may appear as audacity on my part, but I wish to be distinctly understood as opposed to two hundred and fifty, or even two hundred milliampères, being confident that this enormous dosage is liable to do great harm, and also confident that equally good results will be obtained by a much smaller dosage.

It may require a little longer time to produce the desired results. The tumor may not shrink quite so rapidly, but the treatment will not cause nearly the pain, and the danger of complications of an inflammatory character is greatly lessened.

I believe that an apparatus capable of supplying a gal-

vanic current of one hundred milliampères, *with the patient in the circuit*, is all that is required, and that the best possible results with this dosage can be obtained.

FREQUENCY OF TREATMENT.—As to frequency of treatment no positive rule can be given. The condition of the patient, her ability to tolerate and the circumstances in a given case must be our guide. As a general rule, however, three sittings each week will be all that is required. This does not apply to profuse hemorrhages, which, if the case be urgent, may be treated daily. The sittings should be from five to fifteen minutes in duration, according to the dosage, a longer sitting for a smaller number of milliampères, in my opinion, accomplishing as good results.

CONTROL OF THE PATIENT.—Although Apostoli claims that no special restrictions are necessary to be placed on the patients during a course of treatment, *it seems to me imperative that they should be on their feet as little as possible*. It is my experience that after a few weeks the cases improve, and as they improve they become correspondingly active, and unless they be held in check by a very firm hand, they are, before they are aware, going about and taking an amount of exercise that is certainly not conducive to rapid improvement; they return complaining of pain in the back, pelvis and thighs, and upon inquiry admit of over-exercise to a degree that is sometimes extraordinary.

A rest of an hour in the office, providing an extra room is at our command, and of not less than half an hour, when the patient is receiving a high dosage, is imperative, together with absolute rest at home for a few hours following the treatment. This should be insisted on in every instance. These directions are entirely at variance with those of Apostoli, yet I cannot withhold calling attention to them and advise their observance in every case.

With the statistics quoted from Mr. Madden's paper before us, showing a mortality resulting of from twenty-five

to thirty-five per cent. in operations for hysterectomy, it seems to me that no man is justified in advising or performing this most terrible of all operations until he has given the patient a trial of the Apostoli method. Should electricity fail to give relief, we have not complicated matters; we shall always have laparotomy to fall back upon, providing our patient's condition becomes unbearable or hemorrhage threatens life, and with no less chance for recovery.

166 EUCLID AVENUE, June 5, 1888.

LIST OF MEMBERS

OF THE

OHIO STATE MEDICAL SOCIETY,

WITH THEIR

POST-OFFICE ADDRESS AND DATE OF ADMISSION.

Adams, P. A	Dayton	1885
Alcorn, A. W	Ravenna	1870
Allen, D. B	West Liberty	1865
Allen, Dudley	Oberlin	1870
Allen, Dudley P	Cleveland	1885
Allen, Harlan P	Columbus	1884
Amidon, Rebecca S	Painesville	1886
Anderson, James	Salem	1884
Andre, O. C	Piketon	1888
Asbury, T. B	Jerome	1878
Ash, William N	Toledo	1887
Axline, C	Fultonham	1884
Ayers, S. C	Cincinnati	1877
Bain, F. D	Kenton	1885
Baker, A. R	Cleveland	1886
Baker, George G	Akron	1884
Baker, W. O	Louisville	1882
Baldwin, J. F	Columbus	1875
Ballinger, J. B	Versailles	1880
Barnes, E. J	Hebron	1888
Barnes, W. T	Fredericksburg	1879
Barnhill, J. U	Columbus	1884
Barrere, D. M	New Carlisle	1884
Barton, T. J	Zanesville	1[illegible]

Battles, W. S.	Shreve	1858
Bauer, F. J.	Mogadore	1886
Bauer, M. M.	Lake	1884
Beach, J. N.	West Jefferson	1854
Beach, T. D.	Catawba	1884
Beardsley, C. E.	Ottawa	1869
Beck, J. S.	Dayton	1879
Beers, A. M.	Newcomerstown	1882
Belden, A. C.	Akron	1878
Belt, W. A.	Kenton	1887
Bessey, J. Mortimer	Toledo	1887
Bennitt, J.	Cleveland	1869
Beverly, P. F.	Columbus	1862
Bishop, S. P.	Delta	1870
Blair, James F.	Linwood	1884
Blake, W. H.	Shadeville	1878
Bleile, A. M.	Columbus	1882
Bœrstler, G. W.	Lancaster	1870
Bowen, A. H.	London	1878
Boylan, A.	Milford Centre	1878
Bramble, D. D.	Cincinnati	1870
Brannan, T. H.	Canal Dover	1884
Brashear, B. B.	Akron	1886
Brayton, F. W.	Carey	1881
Bricker, W. R.	Shelby	1884
Brinkerhoff, D. H.	Fremont	1853
Brockett, A. J.	Bristolville	1874
Brown, H. H.	Lyons	1887
Brown, H. M.	Hillsboro	1882
Brown, J. A.	Germantown	1886
Brown, W. B.	Columbus	1888
Brundage, A. H.	Xenia	1878
Brush, E. C.	Zanesville	1878
Buckingham, John M.	Springfield	1885
Buckner, J. H.	Cincinnati	1863
Buechner, W. L.	Youngstown	1879
Buffett, Lewis	Cleveland	1880
Bunce, Wm.	Oberlin	1864

Bunn, J. W	West Union	1882
Butler, G. W	Columbus	1869
Caldwell, Wm	Fremont	1886
Caldwell, W. W	Hamilton	1874
Campbell, W. A	Eaton	1888
Carmichael, W. A	Loveland	1871
Carpenter, A. B	Cleveland	1886
Carpenter, Julia W	Cincinnati	1879
Carr, E. C	Coshocton	1882
Carrick, A. L	Cincinnati	1871
Case, F. D	Ashtabula	1886
Chamberlain, D. P	Toledo	1874
Chapman, Byron	Copley	1885
Chapman, W. C	Toledo	1875
Chase, James L	Toledo	1874
Chaney, H. L	Columbus	1886
Christopher, W. S	Cincinnati	1888
Clark, C. F	Columbus	1885
Clark, John H	Mechanicsburg	1869
Cline, J. W	Germantown	1886
Coldham, James	Toledo	1884
Coleman, N. R	Columbus	1875
Collamore, G. A	Toledo	1880
Colvill, G. H	Harrisville	1887
Conklin, W. J	Dayton	1868
Conn, Eli	Akron	1887
Conner, P. S	Cincinnati	1868
Cook, Alta F	Sandusky	1885
Cook, G. F	Oxford	1885
Cooper, A	Columbus	1881
Corlett, W. T	Cleveland	1882
Corson, O. M	Middletown	1879
Courtwright, A. P	Circleville	1871
Courtwright, G. S	Lithopolis	1867
Cowan, Chas. S	Harden	1885
Cox, J. M	South Salem	1877
Craig, J. Harvey	Mansfield	1886
Craig, J. W	Mansfield	1874

Crane, A. M.	Marion	1881
Culbertson, Howard	Zanesville	1855
Cushing, H. K.	Cleveland	1857
Dandridge, N. P.	Cincinnati	1871
Darby, F. H.	Morrow	1882
Daugherty, J. D.	Dayton	1879
Davies, W. C.	Granville	1882
Davis, A. A.	Abilene, Kansas	1884
Davis, B. W.	Marion	1878
Davis, Wm. B.	Cincinnati	1865
Dawson, W. W.	Cincinnati	1853
Deahofe, S. P.	Potsdam	1888
Denman, W. C.	Marion	1882
De Vilbiss, Allen	Toledo	1887
Dickey, John A.	Goshen	1884
Dickey, Thomas A.	Middletown	1879
Dimond, Henry C.	Springfield	1885
Donahoe, H. J.	Sandusky	1854
Donnellan, J. E.	Germantown	1879
Dorman, W.	Ashtabula	1886
Drake, I. L.	Lebanon	1859
Duff, J. S.	Cadiz	1888
Duncan, A. M.	Bucyrus	1886
Duncan, James A.	Toledo	1874
Dunlap, Alexander	Springfield	1854
Dunlap, C. O.	McArthur	1881
Dunlap, C. W.	Springfield	1869
Dutton, C. F.	Cleveland	1880
Dwyer, R. D.	New Petersburg	1879
Eckman, Hiram	Tuscarawas	1869
Eddy, C. W.	Marietta	1888
Elster, L. A.	Jeffersonville	1884
Emery, W. H.	Mt. Sterling	1881
Erwin, R. W.	Bay City, Mich.	1872
Evans, A. E.	Columbus	1882
Evans, R. P.	Franklin	1879
Everhard, N. S.	Wadsworth	1870
Everts, Orpheus	College Hill	1885

Fackler, J. E	Versailles	1879
Ferguson, J. W	Congress	1882
Ferrell, C. B	Columbus	1878
Firestone, L	Wooster	1852
Fisher, H. M	Akron	1881
Fisher, P. Q	Nashport	1873
Floyd, J. C. M	Steubenville	1884
Follett, Alfred	Granville	1864
Foltz, Abner E	Akron	1886
Forbes, S. F	Toledo	1856
Foster, G. F	Kingston Center	1882
Fowler, S. W	Delaware	1873
Frankenberg, O	Columbus	1873
Franklin, G. S	Chillicothe	1876
Fraunfelter, James	Canton	1886
Fuller, S. W	Bellefontaine	1853
Gale, C. Bernard	Newport	1886
Gale, G. T	Newport	1888
Galer, Frank M	DeGraff	1874
Galloway, C. M	Xenia	1888
Gawne, A. J	Sandusky	1870
Gay, N	Columbus	1848
Gibson, Richard D	Youngstown	1882
Gill, H. Z	Eldorado, Kan	1884
Gillespie, J. M	Bloomingburg	1880
Gilliam, D. T	Columbus	1873
Goodhue, George	Dayton	1884
Goodson, J. W	Sterling, Kan	1874
Gordon, Joseph C	Mt. Vernon	1886
Gordon, T. W	Georgetown	1849
Goss, J. H	Lancaster	1884
Graefe, Wm	Sandusky	1874
Graham, W. T	Lebanon	1888
Granger, F. M	Russell's Station	1881
Gray, F. C	Lewisburg	1879
Greene, D. W	Dayton	188
Green, H. S	Cardington	1878
Grill, S. P	Orrville	18[illegible]

Groves, J. E	Uhrichsville	1884
Guerin, L. T	Columbus	1888
Guerin, Z. F	Columbus	1884
Guittard, A. M	Mt. Hope	1886
Guittard, F. J	New Bedford	1875
Gunsaulus, F	Columbus	1886
Haldeman, J. S	Zanesville	1885
Halderman, D.*	Columbus	1869
Hall, C	Burlington	1872
Hall, R. B	Chillicothe	1884
Hall, W. W	Springfield	1882
Hamilton, H. A	Perrysburg	1886
Hamilton, J. W	Columbus	1849
Hamilton, Wm. D	Columbus	1886
Hammel, M	Circleville	1878
Hardy, J. M	Whipple	1886
Harmon, Julian	Warren	1886
Harrison, Eugene B	Hutchinson, Kan	1869
Hart, B. F	Marietta	1854
Hart, Samuel	Marietta	1887
Hartman, G. W	Archbold	1887
Hartman, S. D	Tippecanoe City	1874
Hathaway, H. H	East Toledo	1874
Haverfield, J. W	Uhrichsville	1886
Hedges, W. B	Delaware	1878
Heiter, Carl	Sandusky	1875
Heistand, E. B	Kenton	1884
Henderson, D. W	Marysville	1856
Henderson, J. P	Newville	1850
Henderson, R	Urbana	1888
Hendrickson, Hugh	Columbus	1868
Herrick, H. J	Cleveland	1868
Herrick, L. C	Columbus	1871
Hiddleson, C. S	Atwater	1888
Hill, N. S	Newville	1866
Hill, H	West Alexandria	1867
Hillbish, F. S	Fremont	1876

* Deceased.

Himes, Isaac N.....Cleveland.....1874
Hinckley, H. D.....Oxford.....1887
Hiner, S. B.....Lima.....1874
Hines, J. A.....Van Wert.....1879
Hipple, J. R.....Waldo.....1881
Hixon, M. M.....Dupont.....1887
Hodges, G. H.....Urbana.....1888
Hoff, J. W.....Pomeroy.....1872
Holliday, B. W.....Cleveland.....1875
Hoover, C. M.....North Benton.....1885
Hough, W. S.....Cuyahoga Falls.....1875
House, A. F.....Cleveland.....1880
Howard, E. W.....Akron.....1852
Hueston, R. C.....Oxford.....1868
Hughes, M. A.....Port Clinton.....1877
Humiston, W. H.....Cleveland.....1880
Hunter, T. S.....Ashland.....1878
Hurd, A.....Findlay.....1870
Hyatt, E. H.....Delaware.....1862
Iddings, A. H.....Dayton.....1879
Ikirt, G. P.....East Liverpool.....1882
Ireland, W. E.....Washington C. H.....1887
Jacobs, W. C.....Akron.....1881
Jennings, E.....Dayton.....1867
Jewett, H. S.....Dayton.....1871
Jewett, W. H.....West Caanan.....1869
Johnson, Homer.....Oberlin.....1880
Johnson, O.....Worthington.....1878
Jones, John D.....Cincinnati.....1887
Jones, J. D.....Newburgh.....1870
Jones, R. E.....Gomer.....1863
Jones, T.....London.....1878
Jones, T. W.....Columbus.....1847
Jones, W. W.....Toledo.....1849
Judkins, C. P.....Cincinnati.....1878
Kahle, A. W.....Lima.....1887
Kahle, R. D.....Lima.....1887
Keller, Thomas F.....New Washington.....1887

Kemper, A. C	Cincinnati	1871
Kendig, E. V	Hayesville	1874
King, C. W	Dayton Insane Asylum	1881
King, John I	Burg Hill	1884
Kinkead, W. W	Nashville, Tenn	1884
Kinsman, D. N	Columbus	1864
Kirkley, C. A	Toledo	1874
Knowlton, A. P	Berea	1870
Koogler, M. A	DeGraff	1884
Kreiger, G. L	Lebanon	1884
Kurz, C. E	Bellaire	1875
Landon, C. P	Westerville	1851
Larimore, F. C	Mt. Vernon	1871
Lash, H. M	Athens	1879
Lash, J. M	Chillicothe	1879
Lathrop, A. B	Swanton	1887
Lawless, J. T	Toledo	1888
Lawrence, F. F	Columbus	1888
Leach, S	Mt. Sterling	1888
Lee, E. B	Garrettsville	1870
Leonard, B. B	West Liberty	1854
Leonard, B. S	West Liberty	1882
Leslie, J. M	Frankfort	1878
Lewis, W. C	Rushville	1869
Lightner, S. B	Sabina	1888
Loving, S	Columbus	1858
Lowman, J. H	Cleveland	1877
Lyman, C. N	Wadsworth	1852
Mack, John	Shelby	1853
Macready, J	Monroe	1885
Maris, Clarence	Columbus	1887
Markle, I. F	Mifflin	1881
Martin, J. T	Green Camp	1884
Matthews, R. C	Columbus	1888
McClellan, B. R	Xenia	1888
McClung, Jno. C	Leipsic	1887
McClure, James	Marietta	1866
McCollum, E. J	Tiffin	1871

McConnell, F. C. ..... Vermilion 1875
McCrea, John D. ..... Delaware 1884
McCready, J. ..... Monroe 1888
McCurdy, John ..... Youngstown 1872
McCurdy, S. L. ..... Denison 1888
McElbright, T. ..... Akron 1884
McElwee, S. ..... Newcastle 1880
McGarraugh, S. B. ..... Cadiz 1887
McGee, J. B. ..... Cleveland 1886
McGrew, Henry ..... Pleasant Ridge 1878
McIlhenny, J. J. ..... Dayton 1840
McIntyre, W. ..... Warrensburg 1881
McKean, William ..... Dundee 1885
McKee, E. S. ..... Cincinnati 1886
McKim, F. E. ..... Marietta 1886
McKinley, E. B. ..... Vaughnsville 1887
McLean, J. T. ..... New Philadelphia 1884
McMillen, J. W. ..... Columbus 1878
McMurray, A. B. ..... Marion 1879
McNeely, J. S. ..... Hamilton 1885
Merrill, A. E. ..... Vermillion 1870
Merriman, E. D. ..... Conneaut 1884
Merriman, D. J. ..... Painesville 1884
Metzler, A. S. ..... Baltic 1874
Mills, J. T. ..... Jersey 1878
Mills, C. H. ..... Toledo 1888
Miller, A. C. ..... Cleveland 1858
Millikin, B. L. ..... Cleveland 1885
Millikin, Dan ..... Hamilton 1879
Moore, D. D. ..... Xenia 1879
Moore, L. G. ..... Kinsman 1878
Morris, Jonathan ..... Ironton 1853
Morris, Joseph ..... Columbus Grove 1879
Mory, J. J. ..... St. Henry's 1871
Mory, D. B. ..... Wilmington 1884
Mosgrove, James M. ..... Urbana 1884
Mounts, J. L. ..... Morrow 1860
Murbach, A. J. ..... Archbold 1874

Murphy, J. A.	Cincinnati	1872
Murray, L. S.	Medina	1870
Muscroft, C. S.	Cincinnati	1854
Myers, I. A.	Shelby	1881
Nash, E. K.	Montrose	1886
Nash, W. H. H.	Columbus	1874
Nau, J. G.	Carroll	1878
Neil, Alexander	Columbus	1868
Nelson, H. W.	Steubenville	1878
Norris, T. B.	Alton	1882
Noyes, H. J.	Meigsville	1888
Nunemaker, H. B.	Philadelphia In. Asy	1875
Ogan, Ambrose	Sedalia	1884
Ousley, J. B.	Jacksonburg	1871
Overly, J. E.	Columbus	1888
Palmer, C. D.	Cincinnati	1871
Parker, Charles B.	Cleveland	1886
Patterson, James W.	Olena	1885
Pearce, H. C.	Urbana	1867
Pennell, W. W.	Fredericktown	1884
Pettitt, R. R.	Dayton	1885
Pickard, P.	Mt. Vernon	1878
Pomerene, P. P.	Berlin	1870
Pomeroy, F. S.	Mountville	1884
Pomeroy, O.	Chardon	1869
Pope, F. F. H.	Dalton	1885
Powell, W. S.	Defiance	1881
Preston, J. C.	Cleveland	1857
Price, Joseph	Randolph	1852
Priest, S. C.	Newark	1878
Quinn, A. T.	Wilmington	1881
Rankin, T. W.	Kirkersville	1881
Ranney, S. W.	Hope	1878
Ransohoff, Joseph	Cincinnati	1879
Reamy, T. A.	Cincinnati	1855
Reed, C. H.	Toledo	1873
Reed, C. A. L.	Hamilton	1881
Reed, R. C. S.	Stockton	1867

Reed, R. Harvey	Mansfield	1884
Reeve, J. C	Dayton	1861
Reinhart, J. C	Toledo	1887
Rheinfrank, J. H	Perrysburg	1886
Rhu, Auguste	Marion	1886
Ricketts, B. M	Cincinnati	1884
Ricketts, E. S	Cincinnati	1882
Ridenour, A. W	Massillon	1886
Ridgway, N. B	Galion	1878
Riggs, J. M	Bryan	1873
Robison, J. D	Wooster	1856
Rodgers, J. H	Springfield	1859
Roebuck, D. Y	Dalton	1886
Rosenwasser, M	Cleveland	1880
Row, G. T	Circleville	1881
Rowles, W. T	Columbus	1888
Russ, R. C	Hillsboro	1880
Russell, E. S	Tuscarawas	1880
Russell, John E	Mt. Vernon	1886
Ryan, George W	Cincinnati	1884
Sager, J	Celina	1882
Santee, Leon B	Marlboro	1885
Sattler, Robert	Cincinnati	1872
Saxton, O. H	Washington C. H	1884
Scheibenzuber, A	Dayton	1885
Schnetzler, H. M	Toledo	1874
Schwan, F. W	Poplar	1880
Scott, A. C	Bladenburg	1884
Scott, B. B	Mt. Vernon	1884
Scott, Daniel A	Akron	1884
Scott, R. E	Bowerston	1887
Scott, W. A	Swanton	1878
Scott, W. J	Cleveland	1855
Scott, Xenophon C	Cleveland	1874
Scoville, S. S	Lebanon	1859
Seeley, W. W	Cincinnati	1871
Shaffner, Jno. F	Willshire	1887
Sharp, B. M	Sidney	1885

Sharp, H. J	London	1882
Sheldon, S. B	Five Mile	1882
Shepherd, W. W	Hillsborough	1871
Sherrard, A. C	Oakwood	1887
Shively, J. W	Kent	1886
Silver, D. R	Sidney	1870
Sinnett, E	Granville	1850
Sisler, L. E	Clinton	1887
Skinner, S. W	Wagon Work	1881
Slocum, C. E	Defiance	1874
Smart, A. R	Toledo	1887
Smith, C. N	Toledo	1887
Smith, D. B	Cleveland	1870
Smith, J. M	New Philadelphia	1884
Smith, W. S	West Milton	1886
Smith, William G	Palmyra	1885
Snodgrass, J	Kenton	1878
Snyder, D. J	Scio	1850
Snyder, S. P	New Bedford	1882
Souders, Samuel	Dean	1879
Southard, J. M	Marysville	1860
Southard, J. Q	Raymond	1882
Spence, J. A	Flushing	1888
Spencer, E. R	Doylestown	1885
Sperry, W	Tallmadge	1886
Spooner, H. K	Republic	1880
Stanley, E	Sandusky	1870
Stansell, J. A	Forest	1866
Starch, A. B	Milan	1880
Stark, W	Cincinnati	1871
Stein, G. S	Columbus	1888
Stephens, Alfred H	Eaton	1884
Stevens, E. B	Lebanon	1853
Stevens, Edward S	Cincinnati	1886
Stevens, M. B	Defiance	1887
Stewart, T. H	Church Hill	1877
Stewart, W. D	Pemberville	1887
Stillwell, Thomas	Fremont	1857

Stockstill, J. N.	New Carlisle	1867
Storey, William	Castalia	1884
Strain, A. J.	London	1881
Sweney, R. L.	Marion	1859
Szendery, L.	Sandusky	1887
Tangeman, C. W.	Cincinnati	1888
Taylor, H. Longstreet	Cincinnati	1888
Taylor, W. H.	Cincinnati	1874
Telfair, Geo. M	Bloomington	1884
Teters, B. F.	Berlin	1886
Thomas, F. W	Marion	1884
Thompson, J. C.	South Bloomfield	1848
Thorn, E. J.	Yellow Springs	1878
Thorn, S. S.	Toledo	1873
Thrasher, A. B.	Cincinnati	1876
Tichenor, E. J.	Lebanon	1869
Titus, A.	Portsmouth	1888
Tobey, H. A.	Lima	1878
Torrence, J. M.	Jamestown	1888
Tracy, J. L.	Toledo	1884
Trimble, R. T.	New Vienna	1881
Turney, Joseph	Nevada	1864
Underhill, J. W.	Cincinnati	1874
Underwood, W. J.	Akron	1869
Upson, H. S.	Cleveland	1888
Vail, J. B.	Lima	1885
Vance, R. A.	Cleveland	1881
Vandervort, J. W.	Harveysburg	1864
Vannata, E.	Fultonham	1855
Van Pelt, C. L.	Toledo	1887
Van Winkle, N. B.	Blanchester	1885
Vigor, F. A.	New Dover	1884
Wagenhals, F.	Columbus	1885
Waggoner, Joseph	Ravenna	1870
Walker, A. B	Canton	1882
Wallace, John	Rushsylvania	1879
Ward, C. S.	Warren	1875
Ward, W. A.	Conneaut	1880

Warner, A. D	Fullertown	1880
Warner, Frank	Columbus	1884
Weaver, J. M	Dayton	1865
Webster, E. W	Kingsville	1876
Weed, F. J	Cleveland	1870
Weed, T. A	Cleveland	1880
Weeks, O. W	Marion	1884
Wellons, G. S.	Barnesville	1878
Welty, O. S	Canal Dover	1886
West, T. J	Tiffin	1875
White, G. M	Columbus	1888
White, Horace W	Delaware	1887
Whittaker, J. T	Cincinnati	1871
Wilkins, John A	Delta	1874
Wilson, D. C	Ironton	1872
Wilson, E. J	Columbus	1884
Wilson, J. L	Greenfield	1871
Williams, A. S	Fostoria	1852
Williams, E	Cincinnati	1856
Williams, J. L	Cardington	1878
Williams, T. B	Cleveland	1886
Willard, G. P	Tiffin	1875
Winslow, J. W	Spring Mountain	1881
Wire, G. W	Wilmington	1885
Wirth, R	Columbus	1886
Wise, D. B	Mt. Eaton	1881
Wood, J. S	Cleveland	1880
Woodbridge, John E	Youngstown	1886
Woods, J. T	Toledo	1862
Woods, D. B	Warren	1852
Woodruff, L	Alton	1867
Woodward, W. R	Cincinnati	1871
Wright, John A	Toledo	1885
Wright, John W	Columbus	1885
Wright, S. St. J	Tallmadge	1880
Wylie, J. L	Ripley	1872
Yost, W. N	Mt. Blanchard	1879
Zenner, Philip	Cincinnati	1882
Zeigler, H. H	Ayersville	1884

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Ludington, H .....Omaha, Neb 1871
Martin, G.....Adrian, Mich.....1877

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Professor Carl Sigmund, Vienna,* Austria.
Professor Herman Zeissl,* Vienna, Austria.
Professor Ed. C. Seaton,* Medical Inspector of the Privy Council, London, England.
Professor M. Jules Guerin, Member Imperial Academy of Medicine, Paris, France.

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*Awl, W. M	Columbus	1872
*Bailey, M. J	New York City	1852
*Baron, P	Ravenna	1870
Bartholow, Roberts	Philadelphia, Pa	1879
Beeman, P	Sidney	1872
Blackburn, J. C	Covington, Ky	1857
*Boerstler, G. W	Lancaster	1865
Brodie, William	Detroit, Mich	1875
*Brower, J. H	Lawrenceburg, Ind	1854
*Childs, H. H	Pittsfield, Mass	1848
*Conant, H	Maumee City	1874
*Dalton, N	Mineral Point, Wis	1871
Gundry, Richard	Catonsville, Md	1879
*Guthrie, C. B	New York City	1849
Harding, M. H	Lawrenceburg, Ind	1854
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*Hayes, I	Philadelphia, Pa	1857
*Hempstead, G. S. B	Portsmouth	1872
Hibberd, James F	Richmond, Ind	1871
Hill, E. L	Oxford	1856
*Hunt, S. P	Richmond, Indiana	1866
Jenks, E. W	Detroit, Michigan	1875
Kerr, John	Canton, China	1875
*Kirtland, Jared P	Cleveland	1874
Kitchen, J. M	Indianapolis, Indiana	1866
*Knight, J	New Haven, Conn	1849
*Lee, Charles A	New York City	1848
Lyons, W. B	Huntington, Indiana	1866

* Deceased.

*McIlvaine, R. R.	New York City	1874
*Mills, L. W.	Ottawa	1876
*Mussey, R. D.	Cincinnati	1865
Noyes, J. F.	Detroit, Michigan	1875
*Parker, Willard	New York City	1852
Safford, E. D.	Parkersburg, W. Va.	1870
Steele, H. K.	Denver, Colorado	1872
Stevenson, J. M.	Pittsburgh, Pa.	1866
*Sutton, George	Aurora, Indiana	1854
Sutton, R. S.	Pittsburgh, Pa.	1884
*Thompson, Robert	Columbus	1865
*Trevitt, William	Columbus	1858
*Tully, William	New Haven, Conn.	1849

*Deceased.

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